ORDER NO. HAD8801021C0
A6

Service Manual

Compact Disc Player

SL-P550

COMPACT disc DIGITAL AUDIO

DIGITAL

Color

(S) .... Silver Type
(K) .... Black Type

Area

Color	Area
(K)	(M) .....U.S.A.
(K)	(MC) .....Canada.
(S)(K)	(E) .....Continental Europe.
(S)(K)	(Ei) .....Italy.
(S)(K)	(EG) .....F.R. Germany.
(S)(K)	(EK).....United Kingdom.
(S)(K)	(EB).....Belgium.
(S)(K)	(EF).....France.
(S)(K)	(EH).....Holland.
(K)	(XL).....Australia.
(K)	(XA).....Asia, Latin America, Middle Near East, Africa and Oceania.
(K)	(XB).....Saudi Arabia.
(K)	(PA).....Far East PX.
(K)	(PE).....European Military.
(K)	(PC).....European Audio Club.

SPECIFICATIONS

■ Audio

No. of channels:	2 (left and right stereo)
Frequency response:	2–20,000 Hz ±0.3 dB
Output voltage:	2 V (at 0 dB)
Dynamic range:	98 dB
S/N ratio:	105 dB
Harmonic distortion:	0.002% (1 kHz, 0 dB)
Total harmonic distortion:	0.004% (1 kHz, 0 dB)
Wow and flutter:	Below measurable limit
Output impedance:	Approx. 600Ω
Load impedance:	More than 10 kΩ
Headphones output level:	15 mW max. 32Ω (adjustable)

■ Signal Format

Sampling frequency:	44.1 kHz
D-A conversion:	16-bit linear

■ Pickup

Wavelength:	780 nm

■ Infrared remote-control transmitter

Dimensions (W×H×D):	61×19×165 mm
Batteries:	UM-4 "AAA" batteries or IEC R03 or equivalent (1.5 V×2)
Weight:	105 g (including batteries)

■ General

Power supply	
For U.S.A. and Canada:	AC 60 Hz, 120 V
For Continental Europe:	AC 50 Hz, 220 V
For United Kingdom:	AC 50 Hz, 240 V
For Australia:	AC 50 Hz, 240 V
For others:	AC 50/60 Hz, 110 V/127 V/220 V/240 V
Power consumption:	15 W
Dimensions (W×H×D):	430×102×330 mm
Weight:	4.8 kg

Specifications are subject to change without notice.
Weight and dimensions shown are approximate.
Measured by EIAJ (CP-307).

Technics

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SL-P550

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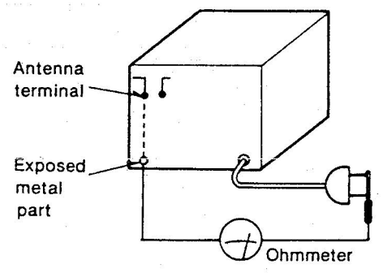
■ SAFETY PRECAUTION (This "safety precaution" is applied only in U.S.A.)

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

•INSULATION RESISTANCE TEST

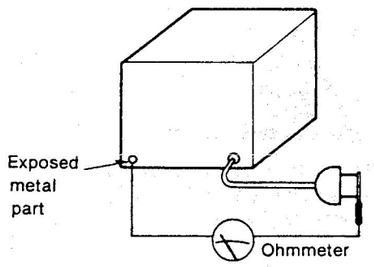
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = 3MΩ—5.2MΩ



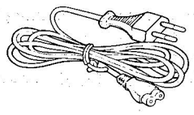
(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ ACCESSORIES

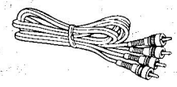
•AC power supply cord 1



SJA168-1 [XA]
SJA173 [XL]
SJA175-1 [M]
SJA175 [MC]
SFDAC05G02 [EK]
SJA183 [XB]
SJA187 other

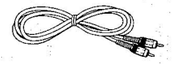
•Stereo connection cable 1

SJP2249-1



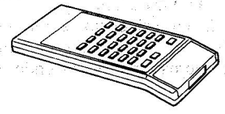
•Coaxial cable 1

SJPD19



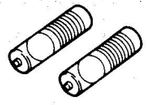
•Remote-control transmitter..... 1

Black version: EUR64781...[M] and [MC] areas
EUR64782...Other areas
Silver version: EUR64783



•Batteries 2

UM-3 or IECR6

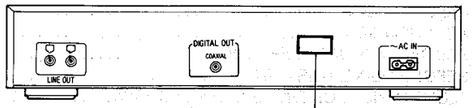


■ PRECAUTION OF LASER DIODE

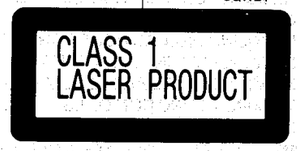
Caution: This product utilizes a laser diode.
ADVARSEL: I dette a apparat anvendes laser.

- **Use of caution labels** Note: ○ Mark is used, × Mark is not used.

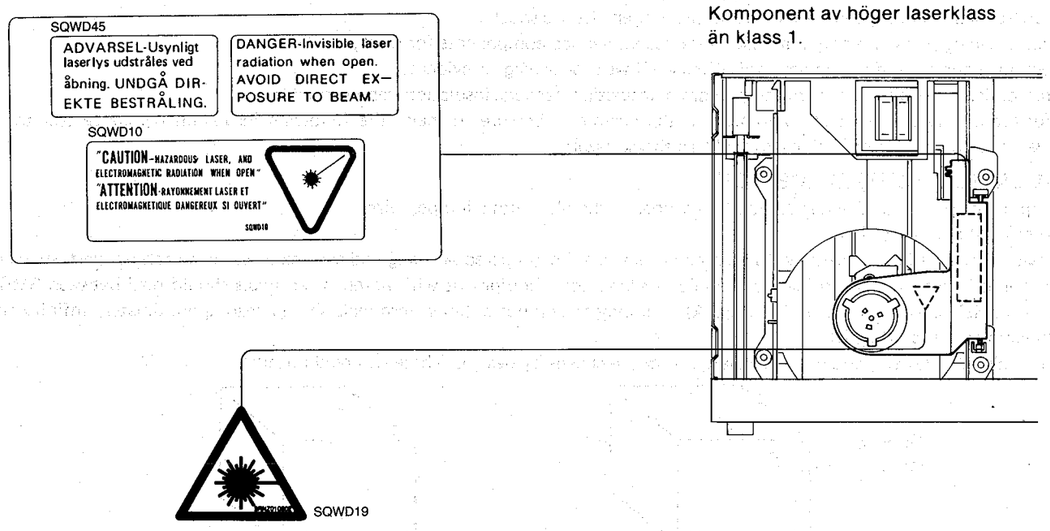
Areas	SQWD45	SQWD10	SQWD7	SQWD19
[MC]	×	○	×	×
[E]	○	×	○	○
[EK], [XL], [EG], [EB], [EH], [EF], [Ei], [XB], [XA]	○	×	○	○



SQWD7



Obs:
Apparaten innehåller laser
Komponent av höger laserklass
än klass 1.

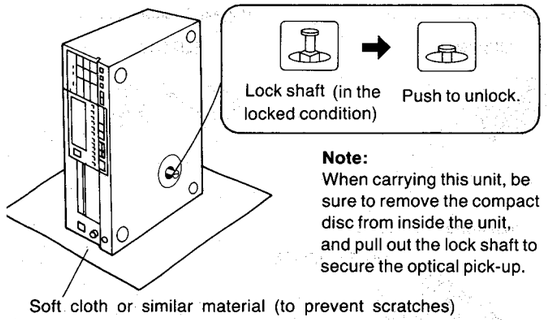

SQWD45
ADVARSEL-Usynligt laserlys udstråles ved åbning. UNDGÅ DIREKTE BESTRÅLING.
DANGER-Invisible laser radiation when open. AVOID DIRECT EXPOSURE TO BEAM.
SQWD10
"CAUTION-HAZARDOUS LASER, AND ELECTROMAGNETIC RADIATION WHEN OPEN"
"ATTENTION-RAYONNEMENT LASER ET ELECTROMAGNETIQUE DANGEREUX SI OUVERT"
SQWD10
SQWD19

VAROITUS! Laite sisältää laserdiodin, joka lähettää näkymätöntä silmille vaarallista lasersäteilya

■ BEFORE USING THIS UNIT

Before placement

The optical pick-up is secured to prevent damage during transport. Be sure to release it before use.



Soft cloth or similar material (to prevent scratches)

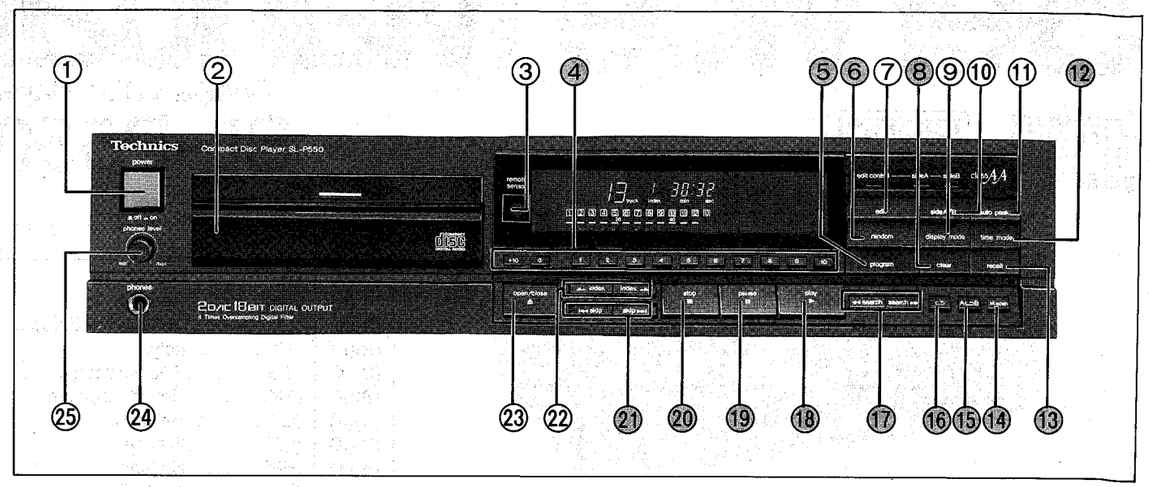
Note:
When carrying this unit, be sure to remove the compact disc from inside the unit, and pull out the lock shaft to secure the optical pick-up.

Notes of placement

■ **Place on a flat, level surface so that the front-rear inclination does not exceed 5°.**
■ **Avoid places such as the following:**
- Near any equipment or device that generates strong magnetism.
- On any heat-generating equipment or device, or in any place where the temperature is high (40°C or higher).
- Extremely cold places (5°C or below).
- Near a tuner or TV (It may cause noise in the broadcast, or disturbance of the TV picture.)

■ **Do not place heavy objects, other than system components, on top of the unit.**
■ **When carrying or storing the unit, handle it with care so it is not subjected to any strong bumps.**
Always remove the disc before storing the unit for any period of time.
■ **To avoid problems due to vibration.**
- Do not place a book or similar object under this unit.
- Do not route the connection cables (of this or other units) across the operation panel, across the top, or under the unit.

■ FLONT PANEL CONTROLS AND FUNCTIONS



Control section

① Power switch (power)

② Disc holder

③ Remote-control signal receptor (remote sensor)

④ Numeric buttons (+10, 0, 1~10)
These buttons can be used to select the track numbers and the recording time.

⑤ Programmed-play button (program)

⑥ Random-play button (random)
This button can be used to select "random" play (the unit's microcomputer selects the sequence of track play in a random order).

⑦ Compact-disc edit button (edit)
When compact-disc sounds are to be recorded to tape, this button can be used to calculate the number of tracks that can be recorded on the two sides of the tape, considering the length of the cassette tape used, so that there is no interruption of tracks.

⑧ Clear button (clear)

⑨ Display-mode select button (display mode)
This button can be used to select, each time it is pressed, either the display of the play position of the disc, or the display of the output level, by the indicator.

⑩ Tape-side select button (side A/B)

⑪ Peak-level search button (auto peak)
This button can be used to locate the maximum signal level (peak level) for the signals on the disc. This is a convenient feature that helps when adjusting the recording level when compact-disc sounds are to be recorded to tape.

⑫ Time-mode select button (time mode)

⑬ Recall button (recall)

⑭ Music scan button (M. scan)
This button can be used to play the first part of each track in order.

⑮ A-B repeat button (A⊂B)

⑯ Repeat button (⊂)

⑰ Search buttons (◀◀ search/search ▶▶)
These buttons can be used to locate a desired part of the disc at high speed (forward or reverse) during disc play. (The search speed is slow when the button is first pressed, and becomes faster if the button is pressed and held continuously.)

⑱ Play button (play/▶)

⑲ Pause button (pause/❚❚)

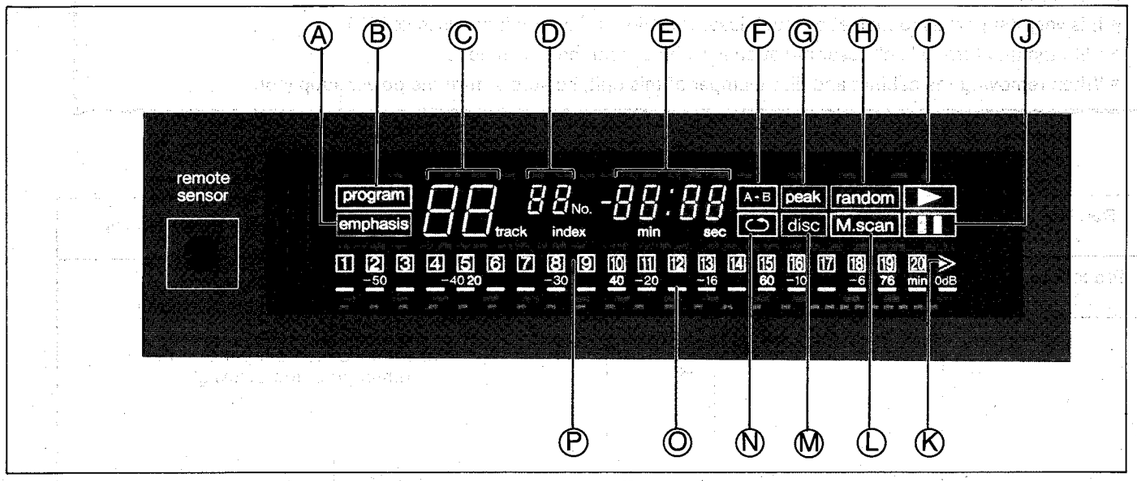
⑳ Stop button (stop/■)
This button can be used to stop the disc play, as well as to cancel the various play modes.

㉑ Skip buttons (⏮ skip/skip ⏭)

㉒ Index-skip buttons (← index/index →)
These buttons can be used to skip to any desired index number, after which play begins from that point.

What index numbers are...
Index numbers are sub track numbers used to subdivide tracks into smaller parts for reference purposes.
Compact discs that have such subdivisions are indicated by the symbol IN:DEX on the notes and commentary that accompany the disc.

The functions indicated by the shaded frames can also be activated by using the remote-control transmitter's controls.



(23) Disc holder open/close button (open/close/⏏)

(24) Headphones jack (phones)

(25) Headphones volume control (phones level)

Indicators section

(A) Emphasis indicator (emphasis)

The sounds on some compact discs are sounds that are re-recordings (as digital signals) of a sound source originally recorded as analog signals.
For some discs of this type, the signal characteristics have been corrected (emphasized), and this indicator illuminates when such discs are loaded in this unit.
For such discs, the output level will be displayed as slightly higher than for analog signals.

(B) Programmed-play indicator (program)

(C) Track number display (track)

(D) Index-number display (No./index)

This display shows the index number as well as the sequence of programmed play.

(E) Time display (min./sec.)

(F) A-B repeat indicator (A-B)

(G) Peak-level search indicator (peak)

(H) Random-play indicator (random)

(I) Play indicator (▶)

(J) Pause indicator (❚❚)

(K) "Over" mark (▶)

The "▶" indicator illuminates if the total number of tracks on the disc is 21 tracks or more.
When the play reaches the 21st track and thereafter, the "▶" begins flashing.

(L) Music scan indicator (M.scan)

(M) Disc indicator (disc)

This indicator illuminates when a disc is loaded.

(N) Repeat indicator (↻)

(O) Play-position/digital output-level indicator

(P) Music matrix (1~20)

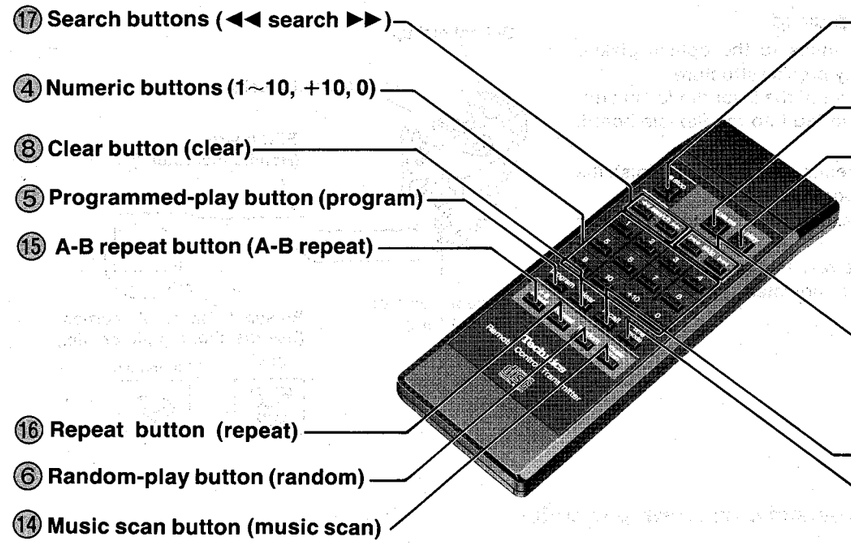
The numbers of the tracks on the disc are displayed up to a maximum of 20.

■ REMOTE CONTROL TRANSMITTER

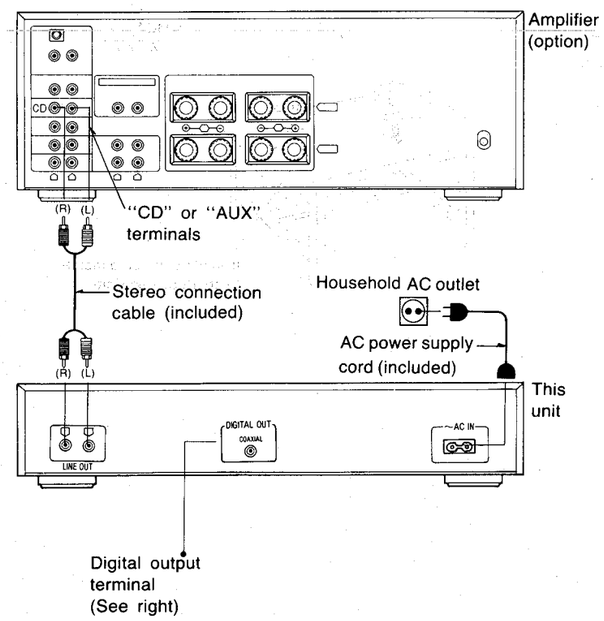
Black version: EUR64781...[M] and [MC] areas
EUR64782...Other areas
Silver version: EUR64783

Control names

The functions indicated by the shaded frames can also be activated by using buttons on the unit. Refer to pages 4~5 about controls functions.


(17) Search buttons (◀◀ search ▶▶)
(4) Numeric buttons (1~10, +10, 0)
(8) Clear button (clear)
(5) Programmed-play button (program)
(15) A-B repeat button (A-B repeat)
(16) Repeat button (repeat)
(6) Random-play button (random)
(14) Music scan button (music scan)
(20) Stop button (■ stop)
(19) Pause button (❚❚ pause)
(18) Play button (▶ play)
(21) Skip buttons (⏮ skip ⏭)
(13) Recall button (recall)
(12) Time-mode select button (time mode)

■ CONNECTIONS



Note:
The configuration of the AC outlet and AC power supply cord differs according to area.

Digital output terminal (DIGITAL OUT)

The output signals of this unit are output from this terminal as digital signals.

•Coaxial terminal (COAXIAL)

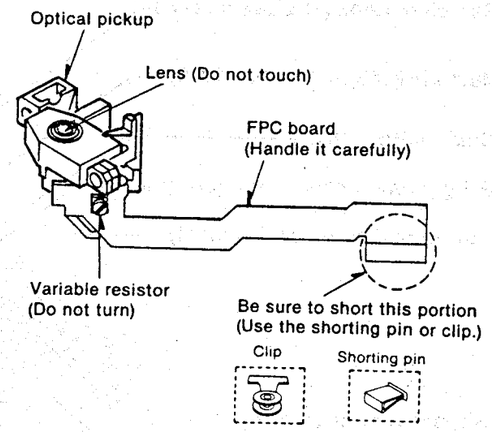
This terminal can be used for connection with other equipment that has a digital input terminal, such as an amplifier, by using a coaxial cable (included).

■ HANDLING PRECAUTIONS FOR OPTICAL PICKUP

The laser diode in the optical pickup may break down due to potential difference caused by static electricity of clothes or human body.
So, be careful of electrostatic breakdown during repair of the optical pickup.

• Handling of optical pickup

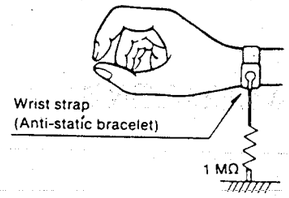
1. Do not give excessive shock to the optical pickup because it is of extremely precise structure.
2. To prevent the breakdown of the laser diode, an anti-static shorting pin is inserted into the flexible board. (FPC board)
   When removing or connecting the short pin, finish the job in as short time as possible.
3. Take care not to apply excessive stress to the flexible board. (FPC board)
4. Do not turn the variable resistor (laser power adjustment). It has already been adjusted.

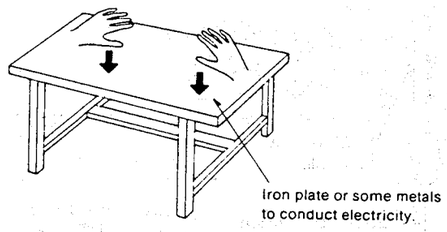


• Grounding for electrostatic breakdown prevention

1. Human body grounding
   Use the anti-static wrist strap to relieve the static electricity from your body.
2. Work table grounding
   Put a conductive material (sheet) or steel sheet on the area where the optical pickup is placed, and ground the sheet.

Caution:
The static electricity of your clothes will not be grounded through the wrist strap. So, take care not to let your clothes touch the optical pickup.

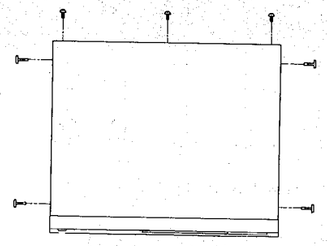




■ DISASSEMBLY INSTRUCTIONS

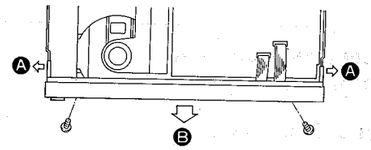
CAUTION:
- It is very dangerous to look at or touch laser radiation. (Laser radiation is invisible.)
- With the unit turned "on", laser radiation is emitted from the pickup lens.
- When removing the cabinet and disc clamper of this unit, be sure to turn the power supply off.

Ref. No. 1	How to remove the cabinet
Procedure 1	1. Remove the 7 screws.

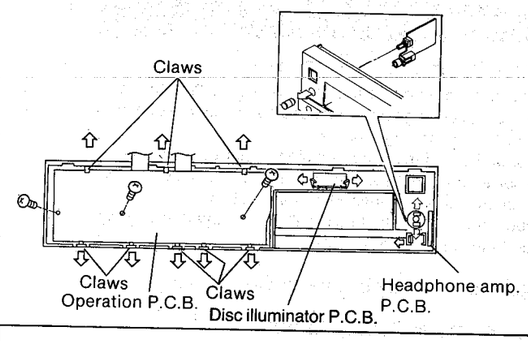


Note: When servicing, lock the lock shaft at the bottom of the unit. (See page 3.)

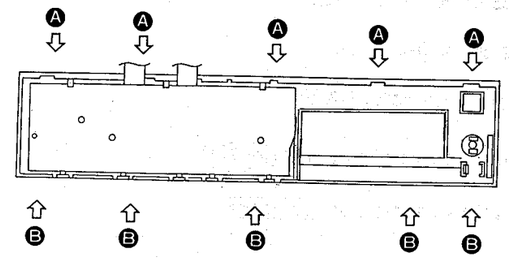
Ref. No. 2	How to remove the front panel
Procedure 1 ➧ 2	1. Remove the 2 screws. 2. Slightly pull the tabs outwards (arrows Ⓐ). 3. Remove the front panel in the direction of the arrow Ⓑ.



Ref. No. 3	How to remove the operation P.C.B., headphone amp. P.C.B., and disc illuminator P.C.B.
Procedure 1 ➧ 2 ➧ 3	**A. Operation P.C.B.** 1. Remove the 4 screws. 2. Release the 8 claws. **B. Headphone amp. P.C.B.** 1. Pull out the level control knob. 2. Release the 3 claws. **C. Disc illuminator** 1. Release the 2 claws.



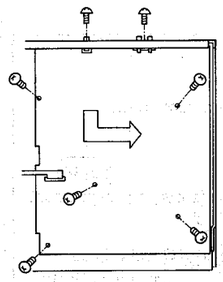
Ref. No. 4	How to remove the front grille
Procedure 1 ➧ 2 ➧ 3 ➧ 4	1. First release the 5 claws Ⓐ at the bottom of the front panel. 2. Then release the 5 claws Ⓑ at the top of the front panel.

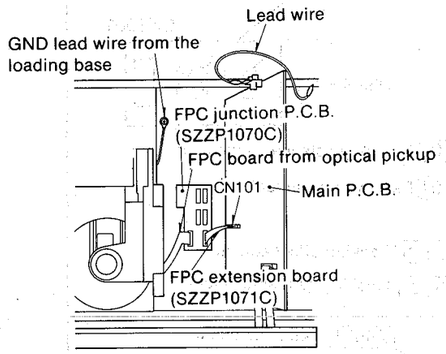


Ref. No. 5 — How to remove the main P.C.B.

Procedure 1 ➧ 5

1. Remove the 7 screws.
2. Lift the P.C.B. to remove it from the chassis tab.
3. Remove the P.C.B. in the direction of the arrow.

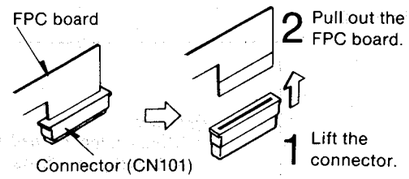




How to check the main P.C.B.

- When checking the soldered surface of the main P.C.B. and replacing the parts, do as shown.

1. Remove the main P.C.B.
2. Remove the FPC board (CN101).



Caution: Insert the shorting pin into the FPC board in order to prevent breakdown of laser diode. (See page 7.)

3. Connect FPC board from optical pickup to FPC junction P.C.B. (SZZP1070C).

Caution: Cover the foil of the FPC junction P.C.B. with friction tape to prevent a short-circuit between the foil and the chassis.

4. Connect FPC extension board (SZZP1071C) to FPC junction P.C.B. and CN101 of the main P.C.B.
5. Place the main P.C.B. as shown in the figure.

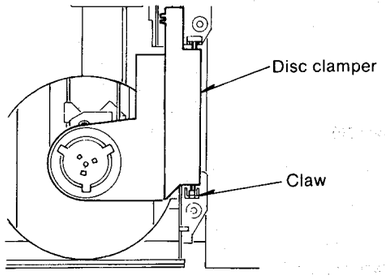
Cautions:

- Be sure to connect the P.C.B. ground terminal (line out terminal) and the chassis with a lead wire.
- Be sure to connect the GND lead wire from the loading base to the chassis.

Ref. No. 6 — How to remove the disc clamper

Procedure 1 ➧ 6

- Release the claw.

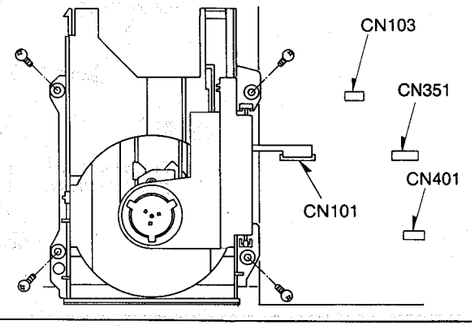


Ref. No. 7 — How to remove the loading base

Procedure 1 ➧ 2 ➧ 7

1. Pull out the 3 connectors (CN103, CN351 and CN401).
2. Remove the FPC board (CN101).
3. Remove the 4 screws.

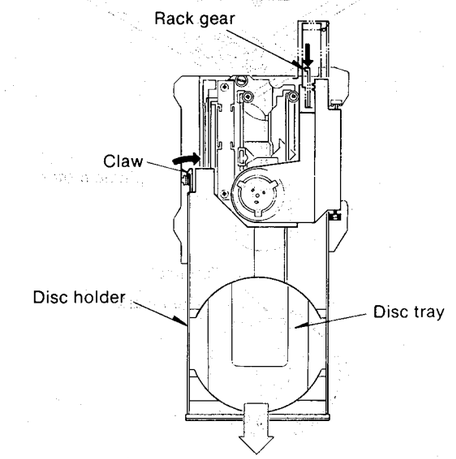
Refer to "HANDLING PRECAUTIONS FOR OPTICAL PICKUP" on page 7.



Ref. No. 8 — How to remove the disc holder

Procedure 1 ➧ 2 ➧ 8

1. Push the rack gear slowly in the direction of the arrow until the disc tray comes up.
2. Pull the disc holder until it stops.
3. Release the claw.
4. Pull out the disc holder further to remove it.

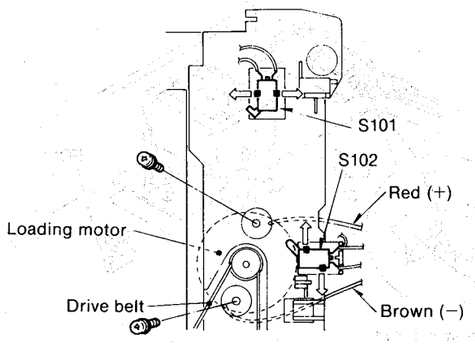


Ref. No. 9 — How to remove the loading motor

Procedure 1 ➧ 2 ➧ 7 ➧ 8 ➧ 9

1. Remote the drive belt.
2. Remove the 2 screws.

Note:
Red lead wire.....(+) terminal
(close to the slit of the motor)
Brown lead wire.....(–) terminal



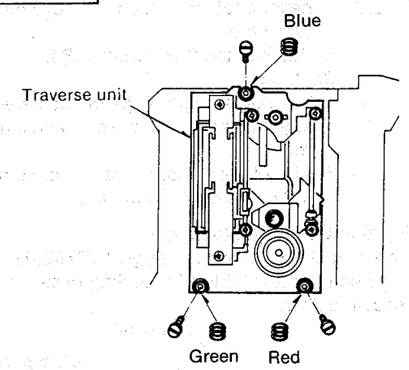
How to remove the switches (S101, S102)

- Release the claws.
- Note the fitting direction before remove it.

Ref. No. 10 — How to remove the traverse unit

Procedure 1 ➧ 2 ➧ 6 ➧ 7 ➧ 8 ➧ 10

- Remove the 3 screws.



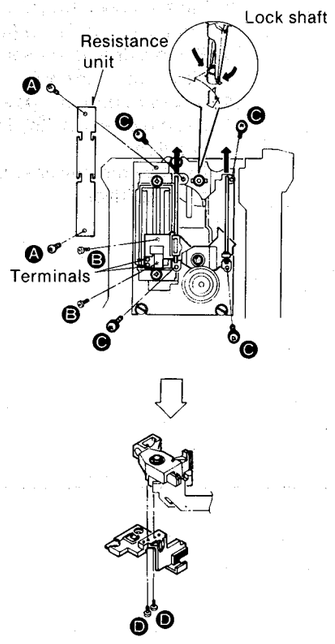
Caution: Note the color of the 3 springs, they must be reinstalled to their original positions.

Ref. No. 11 — How to remove the optical pickup

Procedure 1 ➧ 2 ➧ 6 ➧ 7 ➧ 8 ➧ 11

Caution:
Refer to "Handling precautions for optical pickup" on page 7.

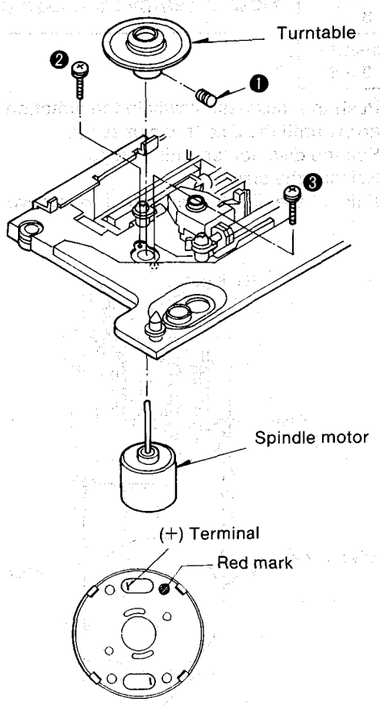
1. Remove the 2 screws Ⓐ and the resistance unit.
2. Unsolder the 2 terminals and 2 screws Ⓑ.
3. Release the claws by using pliers to remove the lock shaft.
4. Remove the 4 screws Ⓒ.
5. Pull out the optical pickup from the 2 guide shafts.
6. Remove the 2 screws Ⓓ to separate the holder from the optical pickup.



Ref. No. 12	How to remove the spindle motor
Procedure 1 ➧ 6 ➧ 7 ➧ 8 ➧ 12	

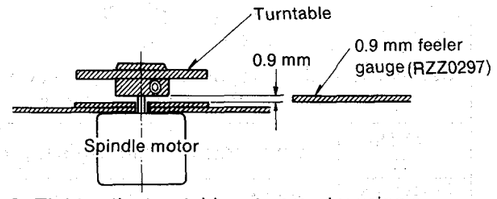
1. Loosen the screw ❶ by using a 1.27 mm hexagonal wrench and remove the turntable.
2. Remove the 2 screws (❷, ❸).

Caution:
1. Turntable height adjustment is necessary any time the turntable or spindle motor is replaced.
2. The (+) terminal of the spindle motor is indicated by the red mark.



Adjustment of turntable height

1. Insert a 0.9 mm feeler gauge (RZZ0297) between the turntable and loading base as shown below.



2. Tighten the turntable set-screw by using a 1.27 mm hexagonal wrench.

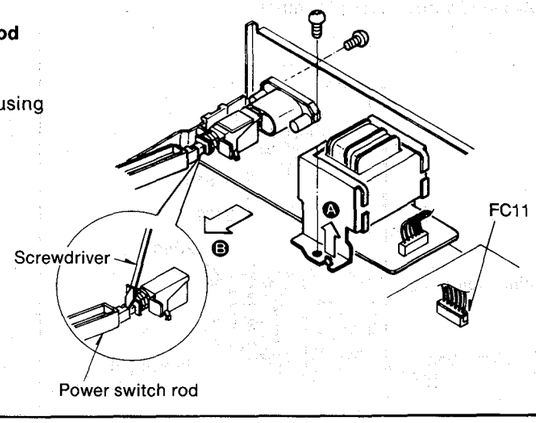
Caution:
Refer to optical pickup adjustment (see page 17).

Ref. No. 13	How to remove the power transformer
Procedure 1 ➧ 2 ➧ 8 ➧ 13	

1. Remove the connector (FC11).
2. Remove the 2 screws.
3. Lift the power transformer to remove it from the chassis tab (arrow Ⓐ).
4. Remove the power source P.C.B. in the direction of arrow Ⓑ.

• How to remove the power switch rod

1. Set the power switch in the "OFF" position.
2. Remove the power switch rod by using a screwdriver.

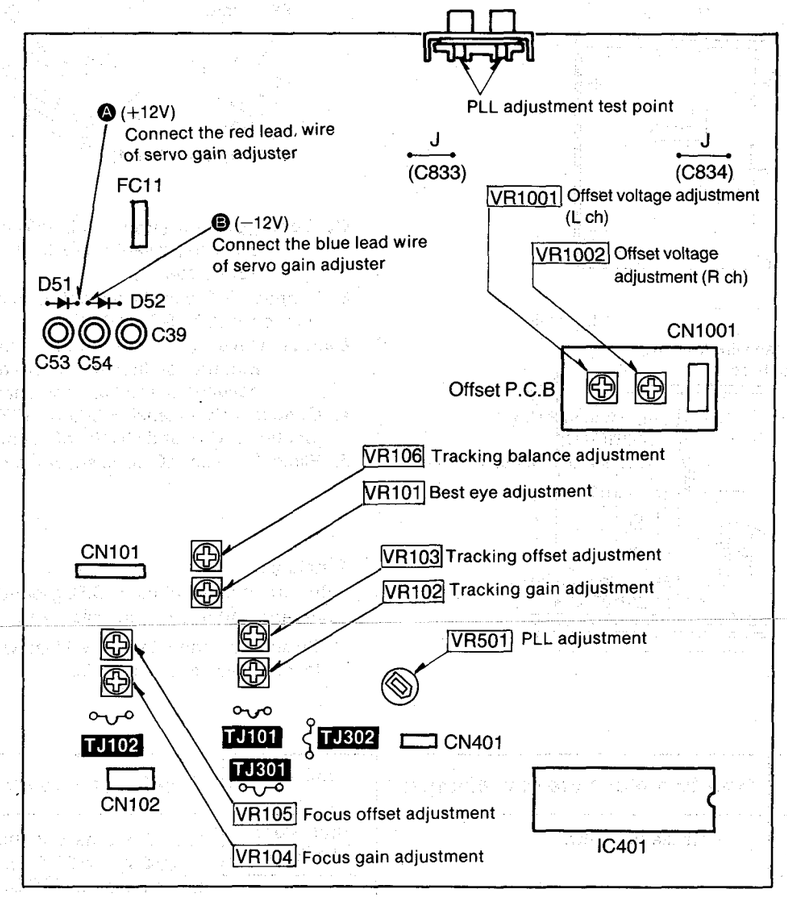


■ MEASUREMENTS AND ADJUSTMENTS

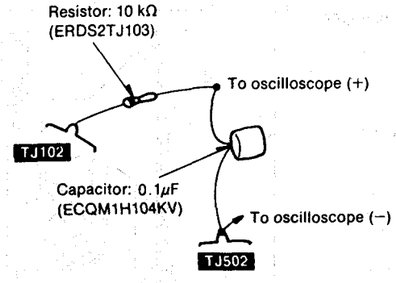
Caution:
- It is very dangerous to look at or touch the laser beam. (Laser radiation is invisible.) With the unit turned "on", laser radiation is emitted from the pickup lens. Avoid exposure to the laser beam , especially when performing adjustments.

ADJUSTMENT POINTS

● Main P.C.B.



● Filter for turntable height adjustment



ORDER NO. HAD8801021C0-A

Compact Disc Player

SL-P550

DEUTSCH

ELEKTRISCHE JUSTIERUNG

Meßinstrumente und Spezialwerkzeuge
- Servo-Verstärkungs-Justierer (SZZP1017F)
- Testplatten
  Testplatte (SZZP1014F) alter oder neuer Typ
  Inspektions-Testplatte (SZZP1054C)
  Ungleichmäßige Platte (SZZP1056C)
  Schwarzbandplatte (SZZP1057C)
- Gewöhnliche Platte
- Zweikanal-Oszilloskop (mit Trigger) von 30 MHz oder mehr
- Niederfrequenz-Oszillator
- Zwischenstecker (SZZP1032F)

Justierverfahren

Schritt 1: Das Gehäuse entfernen.

Schritt 2: Die einzelnen Regelwiderstände provisorisch einstellen.

Schritt 3: Beste Augen-(PD-Balance)-Justierung

Schritt 4: Den Servo-Verstärkungs-Justierer anschließen.

Schritt 5: Fokus-Verstärkungs-Justierung

Schritt 6: Spurlagen-Verstärkungs-Justierung

Schritt 7: Fokus-Offset-Justierung

Schritt 8: Spurlagen-Offset-Justierung

Schritt 9: Spurlagen-Offset-Balance-Justierung

Schritt 10: Den Servo-Verstärkungs-Justierer abtrennen.

Schritt 11: PLL-Justierung

Schritt 12: Nach der Justierung den Betrieb prüfen.

PROVISORISCHE JUSTIERUNG DER EINZELNEN REGELWIDERSTÄNDE

Hinweis:
Wenn bei einer Platte Überspringungen auftreten oder Wiedergabe nicht möglich ist, die einzelnen Regelwiderstände wie abgebildet provisorisch einstellen.

BESTE AUGEN-(PD-BALANCE)-JUSTIERUNG
1. Kanal 1 des Oszilloskops an **TJ301** (+) und **TJ302** (−) der Hauptplatine anschließen.
   Oszilloskop-Einstellung:
   VOLT .....200 mV
   KIPP .....0,5 μsec.
   EINGANG .....Wechselstrom
2. Den Netzschalter des Spielers einschalten und eine Testplatte (SZZP1014F oder SZZP1054C) einsetzen.
3. Den Spieler auf Wiedergabe schalten.
4. **VR101** so justieren, daß das Augenmuster des HF-Signals maximal gestreckt ist.
5. Den Netzschalter des Spielers ausschalten.

FOKUS-VERSTÄRKUNGS-JUSTIERUNG
1. Den Servo-Verstärkungs-Justierer anschließen.
2. Den Wahlschalter des Servo-Verstärkungs-Justierers auf **2** und den ON-OFF-Schalter auf **ON** stellen.
3. Den Niederfrequenz-Oszillator auf eine Frequenz von **750 Hz** und eine Ausgangsspannung von **100 mVs-s** einstellen. Dann den Oszillator an **OSC** (+) und **GND** (−) des Servo-Verstärkungs-Justierers anschließen.
4. Kanal 1 und Kanal 2 des Oszilloskops an **TP1** und **TP2** des Servo-Verstärkungs-Justierers anschließen. (**TP3** ist die Masseklemme.)
   Oszilloskop-Einstellung:
   VOLT .....200 mV (beide Kanäle)
   KIPP .....1 msec.
   EINGANG .....Gleichstrom
5. Den Netzschalter des Spielers einschalten und eine Testplatte (SZZP1014F oder SZZP1054C) einsetzen.
6. Den Spieler auf Wiedergabe schalten.
7. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"2"** auf **"3"** stellen.
8. Auf dem Oszilloskop werden **750 Hz**-Signale angezeigt. **VR104** justieren, bis die Wellenform-Amplituden beider Kanäle identisch sind.
9. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"3"** auf **"2"** stellen.

SPURLAGEN-VERSTÄRKUNGS-JUSTIERUNG
1. Die Oszilloskop-Einstellung und der Anschluß sind die gleichen wie oben.
2. Den Niederfrequenz-Oszillator auf eine Frequenz von **1,0 kHz** und eine Ausgangsspannung von **100 mVs-s** stellen.
3. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"2"** auf **"1"** stellen.
4. Auf dem Oszilloskop werden **1,0 kHz**-Signale angezeigt. **VR102** justieren, bis die Wellenform-Amplituden beider Kanäle identisch sind.
5. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"1"** auf **"2"** stellen.
6. Den Netzschalter des Spielers ausschalten.

FOKUS-OFFSET-JUSTIERUNG
1. Kanal 1 des Oszilloskops an **TJ301** (+) und **TJ302** (−) der Hauptplatine anschließen.
   Kanal 2 des Oszilloskops an **TJ102** (+) und **TJ302** (−) der Hauptplatine anschließen.
   Oszilloskop-Einstellung:
   VOLT .....200 mV (beide Kanäle)
   KIPP .....0,5 msec.
   EINGANG .....Wechselstrom (Kanal 1), Gleichstrom (Kanal 2)
   BETRIEBSART ....NORM (Schaltgriff auf Kanal 1)
2. Den Netzschalter des Spielers einschalten und die Testplatte (SZZP1057C) einsetzen.
3. Den Spieler auf Wiedergabe schalten.
4. Die Wellenform von Kanal 1 und Kanal 2 auf dem Oszilloskop prüfen und **VR105** so justieren, daß die Wellenform um den Triggerpunkt so wie in der Abbildung wird.

SPURLAGEN-OFFSET-JUSTIERUNG
1. Kanal 1 des Oszilloskops an **TJ301** (+) und **TJ302** (−) der Hauptplatine anschließen.
   Kanal 2 des Oszilloskops an **TJ101** (+) und **TJ302** (−) der Hauptplatine anschließen.
   Oszilloskop-Einstellung:
   VOLT .....200 mV (beide Kanäle)
   KIPP .....0,5 msec.
   EINGANG .....Wechselstrom (Kanal 1), Gleichstrom (Kanal 2)
   BETRIEBSART ....NORM (Schaltgriff auf Kanal 1)
2. Den Netzschalter des Spielers einschalten und die Testplatte (SZZP1057C) einsetzen.
3. Den Spieler auf Wiedergabe schalten.
4. Die Wellenform von Kanal 1 und Kanal 2 auf dem Oszilloskop prüfen und **VR103** so justieren, daß die Wellenform um den Triggerpunkt so wie in der Abbildung wird.

SPURLAGEN-OFFSET-BALANCE-JUSTIERUNG
1. Den Niederfrequenz-Oszillator auf eine Frequenz von **1 kHz** und eine Ausgangsspannung von **200 mVs-s** einstellen. Dann den Oszillator an **OSC** (+) und **GND** (−) des Servo-Verstärkungs-Justierers anschließen.
2. Kanal 1 des Oszilloskops an **TJ301** (+) und **TJ302** (−) der Hauptplatine anschließen.
   Oszilloskop-Einstellung:
   VOLT .....200 mV
   KIPP .....0,5 msec.
   EINGANG .....Wechselstrom
3. Den Netzschalter des Spielers einschalten und eine Testplatte (SZZP1014F oder SZZP1054C) einsetzen.
4. Den Spieler auf Wiedergabe schalten.
5. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"2"** auf **"1"** stellen.
6. **VR106** so justieren, daß die Ausgangs-Wellenform wie abgebildet wird (Jitter ist minimiert).
7. Den Wahlschalter des Servo-Verstärkungs-Justierers von **"1"** auf **"2"** stellen.
8. Den Netzschalter des Spielers ausschalten.
9. Den Servo-Verstärkungs-Justierer abtrennen und den Kurzschlußstecker von CN102 an der ursprünglichen Position einstecken.

PLL-JUSTIERUNG

1. Kanal 1 des Oszilloskops an die **LINE OUT-Buchse** (entweder linker oder rechter Kanal) und an **Masse** anschließen.
   Oszilloskop-Einstellung:
   VOLT .....1 V
   KIPP .....1 msec.
   EINGANG .....Gleichstrom
2. Den Netzschalter des Spielers einschalten und die Testplatte (SZZP1054C) einsetzen.
3. **Spur Nr. 6 (Keil 0,7 mm)** der Testplatte abspielen.
4. Die auf dem Oszilloskop angezeigte Wellenform prüfen und **VR501** in den folgenden Schritten justieren.
   Schritt 1. **VR501** langsam im Uhrzeigersinn drehen und den Punkt beobachten, an dem die Wellenform auf dem Oszilloskop anfängt zu verzerren.
   Schritt 2. **VR501** langsam entgegen dem Uhrzeigersinn drehen und den Punkt beobachten, an dem die Wellenform auf dem Oszilloskop anfängt zu verzerren.
   Schritt 3. **VR501** auf die Mitte zwischen den in den obigen Schritten **"1"** und **"2"** beobachteten Punkten einstellen.

PRÜFUNG DES WIEDERGABEBETRIEBS NACH DER JUSTIERUNG

Prüfung des Überspring-Suchlaufs

1. Eine gewöhnliche Platte abspielen.
2. Die Skip-Taste drücken, um den Überspring-Suchlauf zu prüfen (in Vorwärts- und Rückwärtsrichtung).

Prüfung des manuellen Suchlaufs

1. Eine gewöhnliche Platte abspielen.
2. Die Taste für manuellen Suchlauf drücken und prüfen, ob einwandfreier manueller Suchlauf mit niedriger und hoher Geschwindigkeit möglich ist (in Vorwärts- und Rückwärtsrichtung).

Prüfen auf Defekte

1. Die Testplatte (SZZP1054C) abspielen.
2. Die **Spur Nr. 6 (Keil 0,7 mm)** wiedergeben und prüfen, daß kein Tonausfall oder Rauschen auftritt.
3. Die **Spur Nr. 13 (schwarzer Punkt 0,7 mm)** wiedergeben und prüfen, daß ein Tonausfall oder Rauschen auftritt.

JUSTIERUNG DES OPTISCHEN ABTASTERS

Meßinstrumente und Spezialwerkzeuge

- Zweikanal-Oszilloskop (mit Trigger) von 30 MHz oder mehr
- Testplatten
  Testplatte (SZZP1014F) alter oder neuer Typ
  Inspektions-Testplatte (SZZP1054C)
  Ungleichmäßige Platte (SZZP1056C)
- Sechskantschlüssel (SZZP1044C...1,5 mm)
- Sechskantschlüssel (1,27 mm)
- Fühlerlehre (RZZ0297)
- Filter
- Schrauben-Versiegelungsfarbe (RZZ0L01)

Justierverfahren

- Wenn der optische Abtaster und der Spindelmotor ausgetauscht werden, die Justierung nach dem folgenden Verfahren durchführen.

Schritt 1: Die einzelnen Regelwiderstände provisorisch justieren.
↓
Schritt 2: Plattentellerhöhe-Justierung
↓
Schritt 3: Mechanische Justierung
↓
Schritt 4: Elektrische Justierung

PLATTENTELLERHÖHE-JUSTIERUNG

1. Kanal 1 des Oszilloskops an **TJ102** (+) und **TJ302** (−) der Hauptplatine durch das Filter anschließen.
   Oszilloskop-Einstellung:
   VOLT .....50 mV
   KIPP .....1 msec.
   EINGANG .....Gleichstrom
2. Das Oszilloskop auf Gleichstrom-Nullbalance einstellen.
3. Den Netzschalter des Spielers einschalten und eine Testplatte (SZZP1014F oder SZZP1054C) einsetzen.
4. Den Spieler auf Wiedergabe schalten.
5. Den auf dem Oszilloskop angezeigten Gleichstrompegel (A mV) messen.
   Wenn der Wert von A under ±**60 mV** liegt, ist die Plattentellerhöhe korrekt. Wenn er nicht in diesem Bereich liegt, die erforderlichen Justierungen unter Verwendung der 0,9 mm Fühlerlehre (RZZ0297) durchführen. Wenn A mehr als +**60 mV** beträgt, den Plattenteller absenken. Wenn A weniger als −**60 mV** beträgt, den Plattenteller anheben.

Die Plattentellerhöhe wie folgt justieren:

A. Die 0,9 mm Fühlerlehre (RZZ0297) wie unten gezeigt einführen.
B. Die Plattenteller-Stellschraube lösen.
C. Die Plattentellerhöhe durch geringfügiges Bewegen der Fühlerlehre in die entsprechende Richtung justieren.
D. Die Plattenteller-Stellschraube mit dem 1,27 mm Sechskantschlüssel anziehen.
E. Die Plattentellerhöhe-Justierung nach den obigen Schritten 1~5 überprüfen.

MECHANISCHE JUSTIERUNG

1. Kanal 1 des Oszilloskops an **TJ301** (+) und **TJ302** (−) der Hauptplatine anschließen.
   Oszilloskop-Einstellung:
   VOLT .....200 mV
   KIPP .....0,5 μsec.
   EINGANG .....Wechselstrom
2. Den Netzschalter des Spielers einschalten und die Testplatte (SZZP1056C) einsetzen.
3. Mit den Tasten für manuellen Suchlauf den Abtaster so positionieren, daß die Schrauben für mechanische Justierung mit den Justieröffnungen in der Bodenplatte ausgerichtet sind.
4. Unter Beobachtung des HF-Signals auf dem Oszilloskop die **beiden Justierschrauben** abwechselnd mit dem 1,5 mm Sechskantschlüssel (SZZP1044C) so einstellen, daß die vertikalen Schwankungen des HF-Signals minimal und das Augenmuster am weitesten gestreckt wird.
5. Den Netzschalter des Spielers ausschalten.
6. Nach der Justierung **Schrauben-Versiegelungsfarbe** (RZZ0L01) auf die Justierschrauben auftragen.

OFFSET-AUSGANGSSPANNUNG-JUSTIERUNG

Meßinstrument

- Digital-Voltmeter

1. Die Taste **"STOP"** drücken und den CD-Spieler auf **"STOP MODE"** stellen.
2. Den Digital-Voltmeter an den Überbrückungsdraht anschließen, der sich in **C833 (linker Kanal)** (+) oder **C834 (rechter Kanal)** (+) befindet, und an die Ausgangsklemme **GND3** (−) anschließen.
3. **VR1001 (linker Kanal)** oder **VR1002 (rechter Kanal)** so einstellen, daß die Spannung ±**1 mV** beträgt.

FRANÇAIS

REGLAGES ELECTRIQUES

Appareils de mesure et outillage spécial

- Boîte de réglage du gain de la boucle d'asservissement (SZZP1017F)
- Disques d'essai
  Disque d'essai (SZZP1014F) nouveau ou ancien modèle
  Disque de vérification (SZZP1054C)
  Disque voilé (SZZP1056C)
  Disque à bande noire (SZZP1057C)
- Disque ordinaire
- Oscilloscope double track à déclenchement, 30 MHz (ou mieux)
- Générateur basse fréquence
- Adaptateur (SZZP1032F)

Procédure de réglage

1ère étape: Retirer le coffret.

2ème étape: Procéder au réglage préliminaire de chaque résistance variable.

3ème étape: Réglage visuel (Equilibrage du photodétecteur)

4ème étape: Brancher la boîte de réglage du gain de la boucle d'asservissement.

5ème étape: Réglage du gain de focalisation.

6ème étape: Réglage du gain de poursuite.

7ème étape: Réglage de l'erreur de focalisation.

8ème étape: Réglage de l'erreur de poursuite.

9ème étape: Réglage de l'équilibrage de l'erreur de poursuite.

10ème étape: Débrancher la boîte de réglage du gain de la boucle d'asservissement.

11ème étape: Réglage de la boucle de calage en phase (PLL).

12ème étape: Vérification du fonctionnement après réglages.

Réglage préliminaire de chaque résistance variable

Remarque:
Si la lecture du disque est impossible ou que des sauts de portions enregistrées apparaissent, procéder au réglage de chaque résistance variable comme il est indiqué ci-après.

REGLAGE VISUEL (EQUILIBRAGE DU PHOTO-DETECTEUR)

1. Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ301** (+) et **TJ302** (−) du circuit imprimé principal.
   Réglages de l'oscilloscope:
   TENSION .....200 mV
   BALAYAGE ....0,5 μs
   ENTREE .....CA
2. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un disque d'essai (SZZP1014F ou SZZP1054C).
3. Procéder à la lecture du disque.
4. Régler **VR101** de sorte que la figure du signal radiofréquence soit aussi étirée que possible.
5. Placer l'interrupteur d'alimentation du lecteur sur la position **OFF**.

REGLAGE DU GAIN DE FOCALISATION

1. Brancher la boîte de réglage du gain de la boucle d'asservissement.
2. Placer le commutateur de cette boîte sur la position **2** et l'interrupteur d'alimentation sur la position **ON**.
3. Régler le générateur basse fréquence de sorte que le signal de sortie soit à la fréquence de **750 Hz** avec une amplitude de **100 mV crête à crête**. Brancher ce générateur entre les bornes **OSC** (+) et **GND** (−) de la boîte de réglage.
4. Relier les entrées (CH1 et CH2) de l'oscilloscope aux bornes **TP1** et **TP2** de la boîte de réglage. (**TP3** est la borne de masse.)
   Réglages de l'oscilloscope:
   TENSION .....200 mV (sur les deux entrées)
   BALAYAGE ....1 ms
   ENTREE CC
5. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un disque d'essai (SZZP1014F ou SZZP1054C).
6. Procéder à la lecture du disque.
7. Basculer le commutateur de la boîte de réglage de la position **2** à la position **3**.
8. Deux traces du signal à **750 Hz** apparaissent sur l'écran de l'oscilloscope. Régler **VR104** de sorte que les amplitudes des deux traces soient identiques.
9. Basculer le commutateur de la boîte de réglage de la position **3** à la position **2**.

REGLAGE DU GAIN DE POURSUITE

1. Les raccordements et les réglages de l'oscilloscope sont identiques à ceux du réglage précédent.
2. Régler le générateur basse fréquence de sorte que le signal de sortie soit à la fréquence de **1,0 kHz** avec une amplitude de **100 mV crête à crête**.
3. Basculer le commutateur de la boîte de réglage de la position **2** à la position **1**.
4. Deux traces du signal à **1,0 kHz** apparaissent sur l'écran de l'oscilloscope. Régler **VR102** de sorte que les amplitudes des deux traces soient identiques.
5. Basculer le commutateur de la boîte de réglage de la position **1** à la position **2**.
6. Placer l'interrupteur d'alimentation du lecteur sur la position **OFF**.

REGLAGE DE L'ERREUR DE FOCALISATION

1. Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ301** (+) et **TJ302** (−) du circuit imprimé principal.
   Relier l'entrée 2 (CH2) de l'oscilloscope aux bornes **TJ102** (+) et **TJ302** (−) du circuit imprimé principal.
   Réglages de l'oscilloscope:
   TENSION .....200 mV (sur les deux entrées)
   BALAYAGE ....0,5 ms
   ENTREE .....CA (CH1), CC (CH2)
   MODE .....NORM (le déclenchement est commandé par CH1)
2. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disques d'essai (SZZP1057C).
3. Procéder à la lecture du disque.
4. Observer les deux traces et régler **VR105** de sorte que l'allure des courbes au voisinage du point de déclenchement soit celle de l'illustration.

REGLAGE DE L'ERREUR DE POURSUITE

1. Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ301** (+) et **TJ302** (−) du circuit imprimé principal.
   Relier l'entrée 2 (CH2) de l'oscilloscope aux bornes **TJ101** (+) et **TJ302** (−) du circuit imprimé principal.
   Réglages de l'oscilloscope:
   TENSION .....200 mV (sur les deux entrées)
   BALAYAGE ....0,5 ms
   ENTREE .....CA (CH1), CC (CH2)
   MODE .....NORM (le déclenchement est commandé par CH1)
2. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disque d'essai (SZZP1057C).
3. Procéder à la lecture du disque.
4. Observer les deux traces et régler **VR103** de sorte que l'allure des courbes au voisinage du point de déclenchement soit celle de l'illustration.

REGLAGE DE L'EQUILIBRE DE L'ERREUR DE POURSUITE

1. Régler le générateur basse fréquence de sorte que le signal de sortie soit à la fréquence de **1 kHz** avec une amplitude de **200 mV crête à crête**. Brancher ce générateur entre les bornes **OSC** (+) et **GND** (−) de la boîte de réglage.
2. Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ301** (+) et **TJ302** (−) du circuit imprimé principal.
   Réglages de l'oscilloscope:
   TENSION .....200 mV
   BALAYAGE ....0,5 ms
   ENTREE .....CA
3. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un disque d'essai (SZZP1014F ou SZZP1054C).
4. Procéder à la lecture du disque.
5. Basculer le commutateur de la boîte de réglage de la position **2** à la position **1**.
6. Régler **VR106** de sorte que l'allure du signal soit celle de l'illustration (l'instabilité de phase est minimale).
7. Basculer le commutateur de la boîte de réglage de la position **1** à la position **2**.
8. Placer l'interrupteur d'alimentation du lecteur sur la position **OFF**.
9. Débrancher la boîte de réglage et replacer le connecteur de court-circuit de CN102 dans la position d'origine.

REGLAGE DE LA BOUCLE DE CALAGE EN PHASE

1. Brancher l'entrée (CH1) de l'oscilloscope entre la borne de sorte ligne **(LINE OUT)** de la voie droite ou gauche et la **masse**.
   Réglages de l'oscilloscope:
   TENSION .....1 V
   BALAYAGE ....1 ms
   ENTREE CC
2. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disques d'essai (SZZP1054C).
3. Lire la **plage No. 6** du disque **(coin 0,7 mm)**.
4. Observer l'allure du signal sur l'oscilloscope et régler **VR501** de la manière suivante:
   1ère étape: Tourner **VR501** doucement dans le sens des aiguilles d'une montre et noter le moment où le signal commence à être perturbé.
   2ème étape: Tourner **VR501** doucement dans le sens contraire des aiguilles d'une montre et noter le moment où le signal commence à être perturbé.
   3ème étape: Régler **VR501** au milieu des deux positions notées au cours des opérations **1** et **2** ci-dessus.

VERIFICATION DU FONCTIONNEMENT APRES REGLAGES

Vérification du saut de plage
1. Lire un disque ordinaire.
2. Appuyer sur la touche de commande de saut de plage et s'assurer que le fonctionnement est correct dans les deux sens.

Vérification de la recherche manuelle
1. Lire un disque ordinaire.
2. Appuyer sur la touche de recherche manuelle et s'assurer que le fonctionnement s'effectue sans à-coups dans les deux vitesses possibles.

Vérification de la lecture
1. Mettre en place un des disques d'essai (SZZP1054C).
2. Lire la **plage No. 6 (coin 0,7 mm)** et s'assurer qu'il n'y a ni bruit ni perte de signal.
3. Lire la **plage No. 13 (point noir 0,7 mm)** et s'assurer qu'il n'y a ni bruit ni perte d'information.

REGLAGE DU CAPTEUR OPTIQUE

Appareils de mesure et outillage spécial
- •Oscilloscope double trace à déclenchement, 30 MHz (ou mieux)
- •Disques d'essai
  Disque d'essai (SZZP1014F) nouveau modèle ou ancien modèle
  Disque de vérification (SZZP1054C)
  Disque voilé (SZZP1056C)
- •Clé hexagonale (SZZP1044C...1,5 mm)
- •Clé hexagonale (1,27 mm)
- •Jauge d'épaisseur (RZZ0297)
- •Filtre
- •Vernis de blocage (RZZ0L01)

Procédure de réglage
•Si le capteur optique ou le circuit imprimé du moteur de rotation sont remplacés, procéder aux réglages en suivant la procédure décrite ci-dessous.

1ère étape: Procéder au réglage préliminaire de chaque résistance variable.
↓
2ème étape: Réglage de la hauteur de la platine.
↓
3ème étape: Réglage mécanique.
↓
4ème étape: Réglage électrique.

REGLAGE DE LA HAUTEUR DE LA PLATINE

1. Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ102** (+) et **TJ302** (−) du circuit imprimé principal.
   Réglages de l'oscilloscope:
   TENSION .....50 mV
   BALAYAGE ....1 ms
   ENTREE CC
2. Régler l'oscilloscope de sorte que la trace soit au centre lorsque l'entrée est égale à 0 V.
3. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un disque d'essai (SZZP1014F ou SZZP1054C).
4. Procéder à la lecture du disque.
5. Mesurer la tension continue (A mV) du signal apparaissant sur l'oscilloscope.
   Si la valeur A est à l'intérieur de la fourchette ±**60 mV**, la hauteur de la platine est correcte. Dans la cas contraire, procéder aux réglages requis en employant la jauge de profondeur (RZZ0297). Si A est supérieure à +**60 mV**, diminuer la hauteur de la platine. Si A est inférieure à −**60 mV**, augmenter la hauteur de la platine.

Réglage de la hauteur de la platine:
A. Introudiure la jauge de 0,9 mm (RZZ0297) comme il est indiqué ci-dessous.
B. Dévisser la vis de positionnement de la platine.
C. Régler la hauteur de la platine en déplaçant légèrement la jauge dans la direction voulue.
D. Resserrer la vis de positionnement au moyen de la clé de 1,27 mm.
E. Vérifier la hauteur de la platine en procédant aux opérations 1 à 5 décrites ci-dessus.

REGLAGE MECANIQUE

1. Relier l'entrée 1 (CH1) de l'oscilloscope aux bornes **TJ301** (+) et **TJ302** (−) du circuit imprimé principal.
   Réglages de l'oscilloscope:
   TENSION .....200 mV
   BALAYAGE ....0,5 μs
   ENTREE .....CA
2. Placer l'interrupteur d'alimentation du lecteur sur la position **ON** et mettre en place un des disques d'essai (SZZP1056C).
3. A l'aide des touches de recherche, déplacer le capteur de telle manière que les vis de réglage mécanique apparaissent à travers les trous pratiqués sur le fond de l'appareil.
4. Observer l'allure du signal radiofréquence sur l'oscilloscope et agir alternativement sur les **deux vis** à l'aide de la clé hexagonale (SZZP1044C) de sorte que la fluctuation verticale des courbes soit minimale et que leur forme soit aussi étirée que possible.
5. Placer l'interrupteur d'alimentation du lecteur sur la position **OFF**.
6. Le réglage terminé, appliquer une **goutte de vernis de blocage** (RZZ0L01) sur la vis de réglage.

COMPENSATION DU NIVEAU DE SORTIE

Reglage audio
•Voltmètre digital

1. Appuyer sur la touche **"STOP"** pour amener le lecteur à l'arrêt.
2. Brancher le voltmètre digital entre **C833 (Voie gauche)** (+) ou **C834 (Voie droite)** (+) et la borne de sortie **GND3** (−).
3. Régler **VR1001 (Voie gauche)** ou **VR1002 (Voie droite)** de sorte que la tention soit égale à ±**1 mV.**

ESPAÑOL

AJUSTE ELECTRICO

Instrumentos de medición y herramientas especiales
- Ajustador de servoganancia (SZZP1017F)
- Discos de prueba
  Disco de prueba (SZZP1014F) tipo antiguo o nuevo
  Disco de prueba de inspección (SZZP1054C)
  Disco desparejo (SZZP1056C)
  Disco de banda negra (SZZP1057C)
- Disco común
- Osciloscopio de dos canales (con disparador) de 30 MHz o más
- Oscilador de baja frecuencia
- Conector de conversión (SZZP1032F)

Procedimiento de ajuste

Paso 1: Saque el mueble.

Paso 2: Realice el ajuste temporario de cada VR.

Paso 3: Ajuste visual óptimo (equilibrio de PD [diferencia de potencia]).

Paso 4: Conecte el ajustador de servoganancia.

Paso 5: Ajuste la ganancia de enfoque.

Paso 6: Ajuste la ganancia de seguimiento.

Paso 7: Ajuste la desviación de enfoque.

Paso 8: Ajuste la desviación de seguimiento.

Paso 9: Ajuste el balance de desviación.

Paso 10: Desconecte el ajustador de servoganancia.

Paso 11: Ajuste el PLL (Bucle de enganche de fase).

Paso 12: Compruebe el funcionamiento después del ajuste.

AJUSTE TEMPORARIO DE CADA VR

Nota:
Si el disco salta o no puede reproducirse, ajuste temporariamente cada VR como se muestra.

AJUSTE VISUAL OPTIMO (EQUILIBRIO DE PD)

1. Conecte CH1 del osciloscopio a **TJ301** (+) y **TJ302** (−) del P.C.B. (tablero de circuitos impresos) principal.
   Puesta de osciloscopio: VOLT .....200 mV
   Barrido .....0,5 μseg.
   Entrada .....CA
2. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1014F o SZZP1054C).
3. Ponga el reproductor en la modalidad de reproducción.
4. Ajuste **VR101** de modo que el patrón visual de la señal de RF se ensanche al máximo.
5. Ponga el interruptor de alimentación del reproductor en la posición **OFF**.

AJUSTE DE LA GANANCIA DE ENFOQUE

1. Conecte el ajustador de servoganancia.
2. Ponga el conmutador selector del ajustador de servoganancia en **2** y el interruptor ON-OFF en **ON**.
3. Ajuste el oscilador de baja frecuencia a la frecuencia de **750 Hz** y voltaje de salida a **100 mVp-p**. Luego conecte el oscilador a los terminales **OSC** (+) y **GND** (−) del ajustador de servoganancia.
4. Conecte CH1 y CH2 del osciloscopio a **TP1** y **TP2** del ajustador de servoganancia (**TP3** es el terminal de puesta a tierra).
   Puesta de osciloscopio:
   VOLT .....200 mV (ambos canales)
   BARRIDO .....1 mseg.
   ENTRADA.....CC
5. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1014F o SZZP1054C).
6. Ponga el reproductor en la modalidad de reproducción.
7. Cambie el conmutador selector del ajustador de servoganancia de **"2"** a **"3"**.
8. En el osciloscopio se visualizarán señales de **750 Hz**. Ajuste **VR104** hasta que las amplitudes de la forma de onda de ambos canales sean iguales.
9. Cambie el conmutador selector del ajustador de servoganancia de **"3"** a **"2"**.

AJUSTE DE LA GANANCIA DE SEGUIMIENTO

1. La puesta del osciloscopio y las conexiones son las mismas que las indicadas anteriormente.
2. Ponga el oscilador de baja frecuencia a **1,0 kHz** y voltaje de salida de **100 mVp-p**.
3. Cambie el conmutador selector del ajustador de servoganancia de **"2"** a **"1"**.
4. En el osciloscopio se visualizarán señales de **1,0 kHz**. Ajuste **VR102** hasta que las amplitudes de la forma de onda de ambos canales sean iguales.
5. Cambie el conmutador selector del ajustador de servoganancia de **"1"** a **"2"**.
6. Ponga en **OFF** el interruptor de alimentación del reproductor.

AJUSTE DE LA DESVIACION DE ENFOQUE

1. Conecte CH1 del osciloscopio a **TJ301** (+) y **TJ302** (−) del P.C.B. principal.
   Conecte CH2 del osciloscopio a **TJ102** (+) y **TJ302** (−) del P.C.B. principal.
   Puesta de osciloscopio:
   VOLT .....200 mV (ambos canales)
   Barrido.....0.5 mseg.
   Entrada .....CA (CH1), CC (CH2)
   Modalidad.....NORM (Disparo vía CH1)
2. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1057C).
3. Ponga el reproductor en la modalidad de reproducción.
4. Verifique la forma de onda de CH1 y CH2 en el osciloscopio, y ajuste **VR105** de modo que la forma de onda alrededor del punto de disparo sea como la que se muestra en la figura.

AJUSTE DE LA DESVIACION DE SEGUIMIENTO

1. Conecte CH1 del osciloscopio a **TJ301** (+) y **TJ302** (−) del P.C.B. principal.
   Conecte CH2 del osciloscopio a **TJ101** (+) y **TJ302** (−) del P.C.B. principal.
   Puesta de osciloscopio:
   VOLT .....200 mV (ambos canales)
   Barrido.....0,5 mseg.
   Entrada .....CA (CH1), CC (CH2)
   Modalidad.....NORM (Disparo vía CH1)
2. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1057C).
3. Ponga el reproductor en la modalidad de reproducción.
4. Verifique la forma de onda de CH1 y CH2 en el osciloscopio y ajuste **VR103** de modo que la forma de onda alrededor del punto de disparo sea como la que se muestra en la figura.

AJUSTE DEL EQUILIBRIO DE DESVIACION DEL SEGUIMIENTO

1. Ajuste el oscilador de baja frecuencia a la frecuencia de **1 kHz** y voltaje de salida de **200 mVp-p**. Luego conecte el oscilador a los terminales **OSC** (+) y **GND** (−) del ajustador de servoganancia.
2. Conecte CH1 del osciloscopio a **TJ301** (+) y **TJ302** (−) del P.C.B. principal.
   Puesta de osciloscopio: VOLT .....200 mV
   Barrido .....0,5 mseg.
   Entrada .....CA
3. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1014F o SZZP1054C).
4. Ponga el reproductor en la modalidad de reproducción.
5. Cambie el conmutador selector del ajustador de servoganancia de **"2"** a **"1"**.
6. Ajuste **VR106** de modo que la forma de onda de la salida sea como se muestra (la fluctuación se hace mínima).
7. Lleve el conmutador selector del ajustador de servoganancia de **"1"** a **"2"**.
8. Ponga en **OFF** el interruptor de alimentación del reproductor.
9. Desconecte el ajustador de servoganancia e inserte el conector de cortocircuito de CN102 en la posición original.

AJUSTE DEL PLL (BUCLE DE ENGANCHE DE FASE)

1. Conecte CH1 del osciloscopio al **terminal LINE OUT** (del canal L o del R) y a **tierra**.
   Puesta de osciloscopio: VOLT .....1 V
   Barrido .....1 mseg.
   Entrada CC
2. Ponga el interruptor de alimentación del reproductor en **ON** e inserte un disco de prueba (SZZP1054C).
3. Reproduzca el **surco No. 6 (cuña de 0,7 mm)** del disco de prueba.
4. Verifique la forma de onda que se visualiza en el osciloscopio y ajuste **VR501** de acuerdo con los siguientes pasos.
   Paso 1. Gire lentamente **VR501** en el sentido de las manecillas del reloj y observe el punto en el que la forma de onda del osciloscopio comienza a deformarse.
   Paso 2. Gire lentamente **VR501** en el sentido contrario a las manecillas del reloj y observe el punto en que la forma de la onda del osciloscopio comienza a deformarse.
   Paso 3. Fije **VR501** en la posición intermedia entre los puntos observados en los pasos anteriores **"1"** y **"2"**.

COMPROBACION DEL FUNCIONAMIENTO DE REPRODUCCION DESPUES DEL AJUSTE

Comprobación de exploración de salto

1. Reproduzca un disco común.
2. Pulse el botón de salto para comprobar la exploración de salto (tanto en la modalidad directa como en la inversa).

Comprobación de exploración manual

1. Reproduzca un disco común.
2. Pulse el botón de exploración manual para comprobar si la exploración manual se puede realizar suavemente a velocidades bajas y altas (tanto en la modalidad directa como en la inversa).

Comprobación de reproducibilidad

1. Reproduzca el disco de prueba (SZZP1054C).
2. Reproduzca el **surco No. 6 (cuña de 0,7 mm)** y verifique si no hay salto de sonido o ruido.
3. Reproduzca el **surco No. 13 (punto negro de 0,7 mm)** y verifique si no hay salto de sonido o ruido.

AJUSTE DE LA TOMA OPTICA

Instrumentos de medición y herramientas especiales

- Osciloscopio de dos canales (con disparador) de 30 MHz o más
- Discos de prueba
  Disco de prueba (SZZP1014F) tipo antiguo o nuevo
  Disco de prueba de inspección (SZZP1054C)
  Disco desparejo (SZZP1056C)
- Llave de tuercas hexagonal (SZZP1044C...1,5 mm)
- Llave de tuercas hexagonal (1,27 mm)
- Calibre de espesor (RZZ0297)
- Filtro
- Adherencia de cierre de tornillo (RZZ0L01)

Procedimiento de ajuste

- Si se cambia la toma óptica y el motor del eje, ajústelos de acuerdo con el siguiente procedimiento.

Paso 1: Ajustar temporariamente cada VR.

Paso 2: Ajuste la altura del plato giradiscos.

Paso 3: Ajuste mecánico.

Paso 4: Ajuste eléctrico.

AJUSTE DE LA ALTURA DEL PLATO GIRADISCOS

1. Conecte CH1 del osciloscopio a **TJ102** (+) y **TJ302** (−) del P.C.B. principal a través del filtro.
   Puesta de osciloscopio: VOLT .....50 mV
   Barrido .....1 mseg.
   Entrada CC
2. Ajuste el equilibrio cero de CC del osciloscopio.
3. Lleve el interruptor de alimentación del reproductor a **ON** e inserte un disco de prueba (SZZP1014F o SZZP1054C).
4. Ponga el reproductor en la modalidad de reproducción.
5. Mida el nivel de CC (AmV) que se visualiza en el osciloscopio.
   Si el valor de A está dentro de la gama de ±**60 mV**, la altura del plato giradiscos es correcta. Si no está dentro de esta gama, realice los ajustes necesarios utilizando el calibre de espesor (RZZ0297). Si A es mayor que +**60 mV**, baje el plato giradiscos. Si A es menor que −**60 mV**, levante el plato giradiscos.

Ajuste la altura del plato giradiscos de la siguiente forma:

A. Inserte el calibre de espesor de 0,9 mm (RZZ0297), como se muestra abajo.
B. Afloje el tornillo de ajuste del plato giradiscos.
C. Ajuste la altura del plato giradiscos moviendo el calibre levemente en la dirección apropiada.
D. Apriete el tornillo de ajuste del plato giradiscos usando la llave de tuerca hexagonal de 1,27 mm.
E. Compruebe el ajuste de la altura del plato giradiscos siguiendo los pasos 1~5 anteriores.

AJUSTE MECANICO

1. Conecte CH1 del osciloscopio a **TJ301** (+) y **TJ302** (−) del P.C.B. principal.
   Puesta de osciloscopio: VOLT .....200 mV
   Barrido .....0,5 μseg.
   Entrada .....CA
2. Lleve el interruptor de alimentación del reproductor a **ON** e inserte el disco de prueba (SZZP1056C).
3. Utilizando los botones de exploración manual, mueva la toma de modo que los tornillos de ajuste mecánico se alineen con los orificios de ajuste del panel inferior.
4. Mientras comprueba la señal de RF del osciloscopio, apriete los **dos tornillos de ajuste** alternativamente con la llave hexagonal de 1,5 mm (SZZP1044C) de modo que la fluctuación vertical de la señal de RF se haga mínima y que el patrón visual se ensanche al máximo.
5. Lleve el interruptor de alimentación del reproductor a **OFF**.
6. Después del ajuste, aplique **adherencia de cierre de tornillo** (RZZ0L01) a los tornillos de ajuste.

ADJUSTE DEL AUDIO

Instrumento de medición

- Voltímetro digital

1. Pulse el botón de parada **"STOP"** y ponga el reproductor en la modalidad de parada.
2. Conecte el voltimetro digital al cable de conexión montado en **C833 (Lch)** (+) o **C834 (Rch)** (+) y al terminal de salida **GND3** (−).
3. Ajuste **VR1001 (Lch)** o **VR1002 (Rch)** de modo que el voltaje sea ±**1 mV.**

Printed in Japan
S880102500TK/HS

ELECTRICAL ADJUSTMENT

Measuring Instruments and Special Tools

- Servo gain adjuster (SZZP1017F)
- Test discs
  Test disc (SZZP1014F) old or new type
  Inspection test disc (SZZP1054C)
  Uneven disc (SZZP1056C)
  Black band disc (SZZP1057C)
- Ordinary disc
- Two-channel oscilloscope (with trigger) of 30MHz or over
- Low frequency oscillator
- Conversion connector(SZZP1032F)

Adjustment Procedure

Step 1: Remove the cabinet. (Refer to page 8.)

Step 2: Make the temporary setting of each VR . (Refer to page 14.)

Step 3: Best eye (PD balance) adjustment. (Refer to page 14.)

Step 4: Connect the servo gain adjuster. (Refer to page 13.)

Step 5: Focus gain adjustment. (Refer to page 14.)

Step 6: Tracking gain adjustment. (Refer to page 14.)

Step 7: Focus offset adjustment (Refer to page 15.)

Step 8: Tracking offset adjustment. (Refer to page 15.)

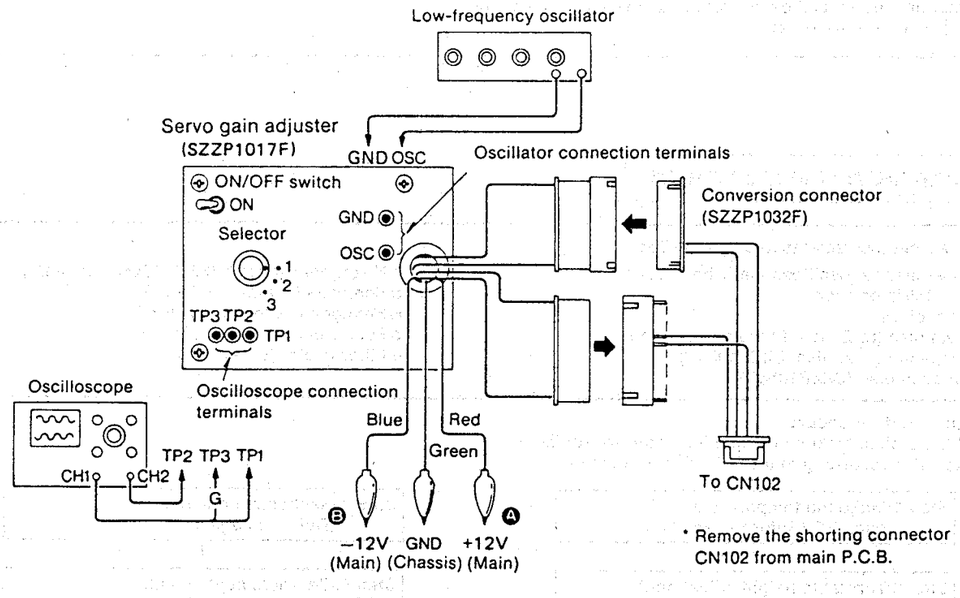
Step 9: Tracking offset balance adjustment.(Refer to page 15.)

Step 10: Disconnect the servo gain adjuster.

Step 11:PLL adjustment. (Refer to page 16.)

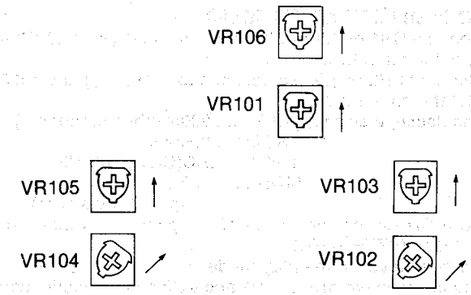
Step 12: Check of operation after adjustment. (Refer to page 16.)

Connection of Servo Gain Adjuster



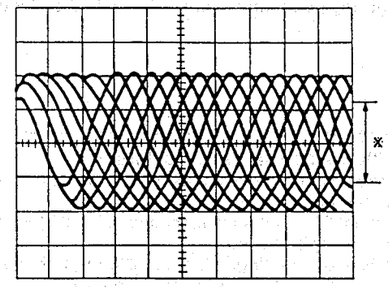
TEMPORARY SETTING OF EACH VR

Note :
If a disc skips or can not be played back , adjust each VR temporarily, as shown.



BEST EYE(PD BALANCE) ADJUSTMENT

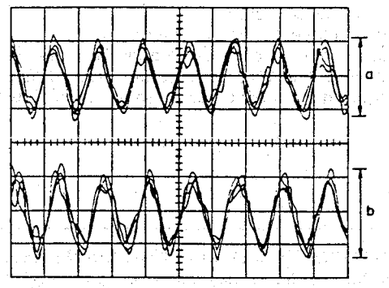
1.Connect CH1 of the oscilloscope to **TJ301** (+) and **TJ302** (-) of the main P.C.B.
Oscilloscope setting:VOLT.....200mV
SWEEP.....0.5µsec.
INPUT.....AC
2.Turn **ON** the power switch of the player and insert a test disc (SZZP1014F or SZZP1054C).
3.Set the player to the play mode.
4.Adjust **VR101** so that the eye pattern of RF signal is stretched to maximum.
5.Turn **OFF** the power switch of the player.



*Most stretched eye pattern

FOCUS GAIN ADJUSTMENT

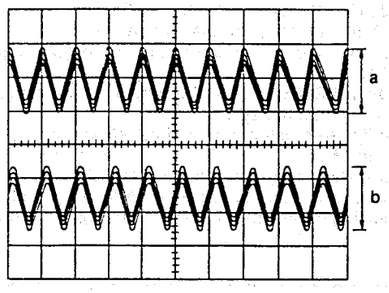
1.Connect the servo gain adjuster.(Refer to page 13.)
2.Set the selector switch of the servo gain adjuster to **2** and ON-OFF switch to **ON.**
3.Set the low frequency oscillator to a frequency of **750Hz** and an output voltage of **100mVp-p.** Then connect the oscillator to **OSC** (+) and **GND** (-) terminals of the servo gain adjuster.
4.Connect CH1 and CH2 of the oscilloscope to **TP1** and **TP2** of the servo gain adjuster.(TP3 is the ground terminal.)
Oscilloscope setting:VOLT.....200mV(both channels)
SWEEP.....1msec.
INPUT.....DC
5.Turn **ON** the power switch of the player and insert a test disc (SZZP1014F or SZZP1054C).
6.Set the player to the play mode.
7.Set the selector switch of the servo gain adjuster from **"2" to "3".**
8.**750Hz** signals will be displayed on the oscilloscope. Adjust **VR104** until the waveform amplitudes of both channels are equal.
9.Shift the selector switch of the servo gain adjuster from **"3" to "2".**



* Make a=b

TRACKING GAIN ADJUSTMENT

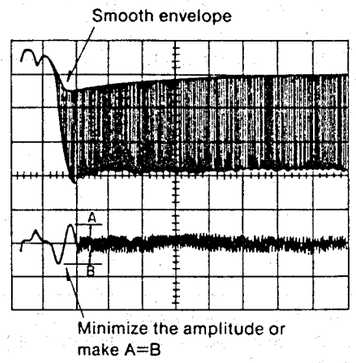
1.Oscilloscope setting and connection are same as above.
2.Set the low frequency oscillator to a frequency of **1.0kHz** and an output voltage of **100mVp-p.**
3.Set the selector switch of the servo gain adjuster from **"2" to "1".**
4.**1.0kHz** signals will be displayed on the oscilloscope. Adjust **VR102** until the waveform amplitudes of both channels are equal.
5.Shift the selector switch of the servo gain adjuster from **"1" to "2".**



*Make a=b

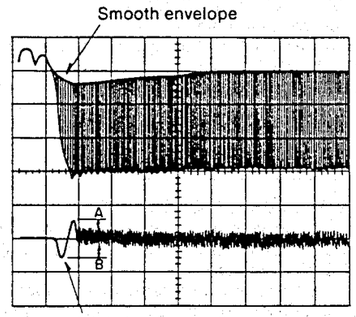
FOCUS OFFSET ADJUSTMENT

1.Connect CH1 of the oscilloscope to **TJ301** (+) and **TJ302** (-) of the main P.C.B.
Connect CH2 of the oscilloscope to **TJ102** (+) and **TJ302** (-)of the main P.C.B.
Oscilloscope setting:VOLT.....200mV(both channels)
SWEEP.....0.5msec.
INPUT.....AC(CH1),DC(CH2)
MODE.....NORM
(Triggering via CH1)
2.Turn **ON** the power switch of the player and insert the test disc (SZZP1057C).
3.Set the player to the play mode.
4.Check the waveform of CH1 and CH2 on the oscilloscope and adjust **VR105**, so that the waveform around the triggering point becomes as shown in the illustration.



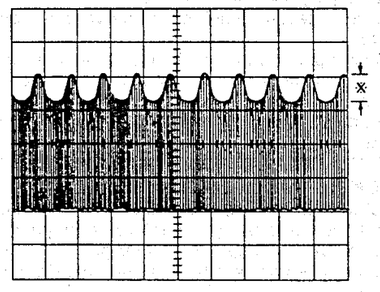
TRACKING OFFSET ADJUSTMENT

1.Connect CH1 of the oscilloscope to **TJ301** (+) and **TJ302** (-) of the main P.C.B.
Connect CH2 of the oscilloscope to **TJ101** (+) and **TJ302** (-) of the main P.C.B.
Oscilloscope setting:VOLT.....200mV(both channels)
SWEEP.....0.5msec.
INPUT.....AC(CH1),DC(CH2)
MODE.....NORM
(Triggering via CH1)
2.Turn **ON** the power switch of the player and insert the test disc (SZZP1057C).
3.Set the player to the play mode.
4.Check the waveform of CH1 and CH2 on the oscilloscope and adjust **VR103**, so that the waveform around the triggering point becomes as shown in the illustration.



TRACKING OFFSET BALANCE ADJUSTMENT

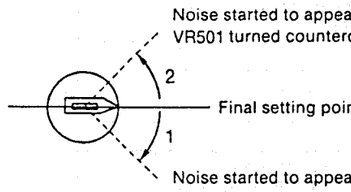
1.Set the low frequency oscillator to a frequency of **1kHz** and an output voltage of **200mVp-p**. Then connect the oscillator to **OSC** (+) and **GND** (-) terminals of the servo gain adjuster.
2.Connect CH1 of the oscilloscope to **TJ301** (+) and **TJ302** (-)of the main P.C.B.
Oscilloscope setting:VOLT.....200mV
SWEEP.....0.5msec.
INPUT.....AC
3.Turn **ON** the power switch of the player and insert a test disc (SZZP1014F or SZZP1054C).
4.Set the player to the play mode.
5.Set the selector switch of the servo gain adjuster from **"2"** to **"1"**.
6.Adjust **VR106**, so that the output waveform is as shown (jitter is minimized).
7.Shift the selector switch of the servo gain adjuster from **"1"** to **"2"**.
8.Turn **OFF** the power switch of the player.
9.Disconnect the servo gain adjuster, and insert the shorting connector of CN102 to the original position.



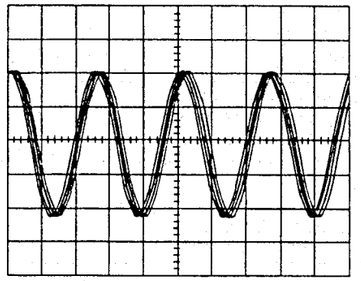
*Jitter should be minimized.

PLL ADJUSMENT

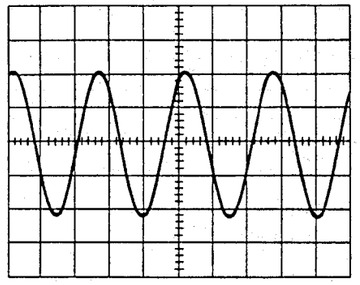
1.Connect CH1 of the oscilloscope to the **LINE OUT terminal** (either of Lch or Rch) and **ground.**
Oscilloscope setting:VOLT.....1V
SWEEP.....1msec.
INPUT.....DC
2.Turn **ON** the power switch of the player and insert the test disc(SZZP1054C).
3.Play **Track No.6 (wedge 0.7mm)** of the test disc.
4.Check the waveform displayed on the oscilloscope and adjust **VR501** in the following steps.
Step 1. Turn **VR501** clockwise slowly and observe the point at which the waveform on the oscilloscope begins to be disturbed.
Step 2. Turn **VR501** counterclockwise slowly and observe the point at which the waveform on the oscilloscope begins to be disturbed.
Step 3. Set **VR501** in the middle between the points observed in the above steps " 1 " and " 2 " .



• NG



• OK



CHECK OF PLAY OPERATION AFTER ADJUSTMENT

Check of skip search
1.Play an ordinary disc.
2.Press the skip button and verify skip search operation (forward and reverse).

Check of manual search
1.Play an ordinary disc.
2.Press the manual search button and verify that smooth manual search can be performed at low and high speeds (forward and reverse).

Check of playability
1.Play the test disc (SZZP1054C).
2.Play the track No.6 (wedge 0.7mm) and verify that there is no skip sound or noise.
3.Play the track No.13 (black dot 0.7mm) and verify that there is no skip sound or noise.

OPTICAL PICKUP ADJUSTMENT

Measuring Instruments and Special Tools

- Tow-channel oscilloscope (with trigger) of 30MHz or over
- Test discs
  Test disc (SZZP1014F) old or new type
  Inspection test disc (SZZP1054C)
  Uneven disc (SZZP1056C)
- Hexagonal wrench (SZZP1044C....1.5mm)
- Screw lock paint (RZZ0L01)
- Hexagonal wrench (1.27mm)
- Feeler gauge (RZZ0297)
- Filter (Refer to page 12)

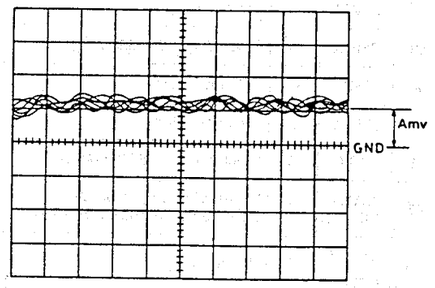
Adjustment Procedure

- If the optical pickup and spindle motor are replaced , adjust it according to the following procedure.

Step 1: Make the temporary of each VR.(Refer to page 14.)
↓
Step 2: Turntable height adjustment. (Refer to page 17.)
↓
Step 3: Mechanical adjustment. (Refer to page 17.)
↓
Step 4: Electrical adjustment. (Refer to page 13.)

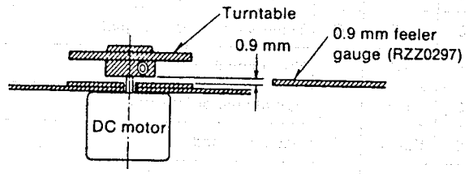
TURNTABLE HEIGHT ADJUSTMENT

1.Connect CH1 of the oscilloscope to **TJ102** (+) and **TJ302** (-) of the main P.C.B.through the filter.(Refer to page 12.)
Oscilloscope setting:VOLT.....50mV
SWEEP.....1msec.
INPUT.....DC
2.Set the oscilloscope to DC zero balance.
3.Turn **ON** the power switch of the player and insert a test disc (SZZP1014F or SZZP1054C).
4.Set the player to the play mode.
5.Measure the DC level (AmV) displayed on the oscilloscope.
If the value of A is within the range of ± 60mV , the turntable height is correct. If it is not within this range , make the necessary adjustments using the 0.9mm feeler gauge (RZZ0297). If A is more than +60mV , make the turntable lower. If A is less than -60mV , make the turntable higher.



Adjust the turntable height as follow:

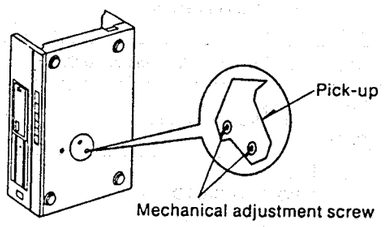
A.Insert the 0.9mm feeler gauge(RZZ0297) as shown below.



B.Loosen the turntable set-screw.
C.Adjust the turntable height to 0.9mm with the feeler gauge as shown above.
D.Tighten the turntable set-screw by using a 1.27mm hexagonal wrench.
E.Check the turntable height adjustment by following steps 1 ~ 5 above.

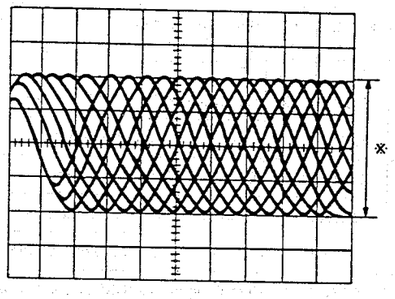
MECHANICAL ADJUSTMENT

1.Connect CH1 of the oscilloscope to **TJ301** (+) and **TJ302** (-) of the main P.C.B.
Oscilloscope setting:VOLT.....200mV
SWEEP.....0.5μsec.
INPUT.....AC
2.Turn **ON** the power switch of the player and insert the test disc (SZZP1056C).
3.Using the manual search buttons , move the pickup so that the mechanical adjustment screws line up with the adjustment holes in the bottom panel.



Note: The mechanical adjustment screws have been already locked with screw lock paint at the factory. It might be hard to turn them.

4.Monitoring RF signal on the oscilloscope, adjust **the two adjusting screws** alternatelywith the 1.5mm hexagonal wrench (SZZP1044C) so that the vertical fluctuation of RF signal is minimized and the eye pattern is most stretched.
5.Turn **OFF** the power switch of the player.
6.After the adjustment, apply **screw lock paint(RZZ0L01)** to the adjusting screws.



AUDIO ADJUSTMENT

Measuring Instrument
●Digital Voltmeter

OFFSET VOLTAGE ADJUSTMENT
1. Press **"STOP"** button and set the player in **"STOP MODE"**.
2. Connect the digital voltmeter to jumper wire mounted in **C833 (Lch)** (+) or **C834 (Rch)** (+) and **GND** (−) terminal.
3. Adjust **VR1001 (Lch)** or **VR1002 (Rch)** so that the voltage is **0±1 mV.**

■ TERMINAL FUNCTION OF LSI

● AN8370S (Optical Servo Control)

Pin No.	Mark	I/O	Function
1	VEE	I	Power supply (connected to -5V)
2	LSA	I	Phase difference input (A)
3	GND	I	GND terminal
4	LSB	I	Phase difference input (B)
5	APC	O	Auto laser power control output
6	TEOUT	O	Tracking error signal output
7	TEG	I	Tracking error gain adjusting input
8	TE(+)	I	Phase difference to voltage conversion (+)
9	TE(-)	I	Phase difference to voltage conversion (-)
10	APC(-)	I	Laser power inversion input
11	C.MEM	I	Capacitor connection for phase difference memory
12	APC(+)	I	Laser power non inversion input
13	VREFE	O	Reference current generation
14	SENSE	O	Selector output (track-crossed)
15	HIN	I	Tracking hold circuit input
16	HOUT	O	Tracking hold circuit output
17	SPCNT	O	Trackcrossing speed control output (not used, (Not connected)
18	C.MSP	I	Trackcrossing reference speed setting capacitor connection (Not connected)
19	C.AF	I	Auto focus timer capacitor connection
20	KICK	O	Track kick signal output
21	VCC	I	Power supply (connected to +5V)
22	CNT1	I	Control input (FOON Focus servo "ON" signal)

Pin No.	Mark	I/O	Function
23	CNT2	I	Control input (TRON Tracking servo ON signal)
24	CNT3	I	Control input (KICKF Kick direction [Foward] command)
25	CNT4	I	Control input (KICKR Kick direction [Reverse] command)
26	F.LOCK	O	Focus lock signal output
27	C.FBDO	O	Capacitor connection for inversion RF high detection
28	C.SBDO	O	Capacitor connection for inversion RF low detection
29	C.SBRT	O	Capacitor connection for non-inversion RF slow detection
30	C.FBRT	O	Capacitor connection for non-inversion RF fast detection
31	RF OUT	O	RF signal output
32	BDO	O	Drop-out detection output
33	RF IN	I	RF signal input
34	S.OUT	O	Focus search signal output
35	C.LW	I	Capacitor connection for triangular wave generation
36	FE.OUT	O	Focus error signal output
37	FEG	I	Focus error gain adjusting input
38	FE.REF	I	Focus error comparison voltage generation
39	PDB	I	Photo detection current input (B)
40	IVB	O	Current/ voltage conversion (B)
41	IVA	O	Current/ voltage conversion (A)
42	PDA	I	Photo detection current input (A)

• MN53010PEH (Serial/Parallel converter)

Pin No.	Mark	I/O	Function
1	WCO	O	Output data word clock (DALO,DBLO,DARO,DBRO)
2	DARO	O	Rch data output, (+)terminal
3	DBRO	O	Rch data output, (-)terminal
4	RST	O	Reset output data to "0"
5	VDD	I	Power supply (connected to +5V)
6	VSS	I	GND terminal
7	F2DAC	I	"H": 2DAC 18-bit "L": 2DAC 17-bit
8	FLOAT	I	"H": 4DAC 18-bit "L": 4DAC 17-bit
9	PHASE	I	"H": Phase inversion "L": Normal mode
10	LRCK	I	Inverter input
11	LRCK	O	LRCK signal inverter output
12	SIN	I	Data input
13	WCI	I	Input data word clock
14	BCI	I	Input data bit clock
15	VSS	I	GND terminal
16	NC	---	Not connected
17	VDD	I	Power supply (connected to +5V)
18	SHR	I	Rch Deglitcher signal

Pin No.	Mark	I/O	Function			
18	SHR	I	Rch Deglitcher signal			
19	SHL	I	Lch Deglitcher signal			
20 31	NC	---	Not connected			
			NORMAL MODE delay: 180ms	TEST MODE delay: 1.45ms	TEST MODE delay: 0.73ms	TEST MODE delay: 0ms
32	NTEST1	I	H	L	H	L
33	NTEST2	I	H	H	L	L
34	NTEST3	I	"H": Normal mode "L": Reset			
35	DALO	O	Lch data output, (+)terminal			
36	DBLO	O	Rch data output, (-)terminal			
37	VDD	I	Power supply (connected to +5V)			
38	VSS	I	GND terminal			
39	NC	---	Not connected			
40	GAIN	O	Gain selector signal H: 0~-12dB L: below -12dB			
41	SH	O	Deglitch signal H: Sample L: Hold			
42	BCO	O	Output data bit clock			

• AN8371S (Data slice and PLL)

Pin No.	Mark	I/O	Function
1	VEE	I	Power supply (connected to -5V)
2	SRF	O	RF signal output data-sliced into digital value
3	EFM	O	EFM signal output synchronized with PCK
4	D.GND	I	GND terminal (digital system)
5	PCK	O	Clock output extracted from SRF
6	VCC	I	Power supply (connected to +5V)
7	VA	I	VCO free run frequency adjusting current input (not connected)
8	VC1	I	Capacitor connection for VCO oscillator frequency
9	VC2	I	Capacitor connection for VCO oscillator frequency
10	VR	I	Resistor connection for VCO oscillator frequency
11	PD	I	Capacitor connection for PLL DO protection
12	PL1	I	PLL loop filter connection

Pin No.	Mark	I/O	Function
13	PL2	I	PLL loop filter connection
14	FPC	I	Frequency comparison error signal input
15	RF	I	RF signal input
16	ARF	O	RF signal output with AGC output
17	AGC	I	ARF signal input for AGF drop-out detection input
18	AC	I	Loop filter for AGC connected
19	DO	O	Drop-out detection pulse output
20	A.GND	I	GND terminal (analog system)
21	DSL	I	RF signal input for data slicing
22	SLC	I	Slicing level control signal input
23	FC1	I	Filter capacitor for data slicer connected
24	FC2	I	Filter capacitor for data slicer connected

• MN6622 (Digital Signal Processing: EFM Decoder, Error Correction ,CLV Servo)

Pin No.	Mark	I/O	Function
1	MEMP	I	Emphasis signal input
2	PC	O	Spindle motor "ON" signal(ON at "L")
3	EC	O	Spindle motor drive signal
4	FG	I	Not connected
5	TTF	I	Spindle motor free run
6	FLAG0	O	Not connected
7	IPFLAG	O	Not connected
8	FLAG6	O	Not connected
9	PCK	I	PLL extract clock input(4.2336MHz)
10	VDD	I	Power supply (connected to +5V)
11	EFM	I	EFM signal input (PLL)
12	SRF	I	EFM signal input (DSL)
13	DO	I	Drop-out signal ("H" at drop-out)
14	CLVS	O	Not connected
15	EPC	O	PLL frequency comparison signal
16	BSSEL	O	Not connected
17	RIN	I	Remote control signal input
18	FSL	I	Not used (connected to GND)
19	SLEEP	I	Not used (connected to GND)
20	SUBC	O	Not connected
21	SBCK	I	Not connected
22	BLKCK	O	Sub-code block(Q-data) clock (75Hz)
23	CLOCK	O	Sub-code frame(Q-data) clock (7.35kHz)
24	SUBQ	O	Sub-code(Q-data) output
25	CRC	O	Not connected
26	RST	O	Reset signal input ("L" = Reset)
27	MLD	I	Data input (command load)
28	MCLK	I	Data clock input (command clock)
29	MDATA	I	Data input (command data)
30	DMUTE	I	Muting control (Not used, connected to GND)
31	TRON	I	Tracking servo "ON" signal (ON at "L")
32	STAT	O	Processing condition (CRC,OTC,CLVOK,TT,STOP) output
33	TX	O	Digital output signal

Pin No.	Mark	I/O	Function
34	TSTR	I	Not used (connected to +5V)
35	TEST	I	Not used (connected to +5V)
36	VSS	I	GND terminal
37	X2	O	Clock output (16.9344MHz)
38	X1	I	Clock input (16.9344MHz)
39	SEL	I	Not used (connected to GND)
40	LDG/ WDCKS	O	Deglitch signal at Lch/ word clock for serial DAC
41	RDG	O	Not connected
42	DEMPH	O	Not connected
43	SMCK	O	Clock output (4.2336MHz)
44	WS	O	Not connected
45	SRCK	O	Not connected
46	XCK	O	Clock output (16.9344MHz)
47	DA15/ SRDATA	O	DA parallel output(MSB)/ Serial data output(MSB FIRST)
48	DA14/ SRDATA	O	Not connected
49	DA13/ SCK	O	DA Parallel output/ serial data output bit clock
50	DA12/ WDCK	O	Not connected
51	DA11/ BYTCK	O	Not connected
52	VSS	I	GND terminal
53	DA10/R/L	O	DA parallel output/ R/L signal (R at "H")
54 56	DA9 DA7	O	Not connected
57	DA6	O	Not used (connected to GND)
58 63	DA5 DA0	O	Not connected
64 71	D7 D0	I/O	16K RAM DATA
72	RAMOE	O	16K RAM OE signal
73	RAMWE	O	16K RAM WE signal
74 84	RAMA0 RAMA10	O	16K RAM address

• MN1554PEF (System Control)

Pin No.	Mark	I/O	Function
1	GND	I	GND terminal
2	DMUTE	O	Muting control
3	MDATA	O	Command data output
4	MCLK	O	Data clock output (command clock)
5	MLD	O	Data output (command load)
6	DOUTON	O	Optical output control signal
7	EMPH	O	Emphasis signal output
8	P11	I	Not connected
9	P12	I	Not connected
10	P13	I	Not connected
11	SYNC	O	Not connected
12	SIRQ	I	Not used (connected to +5V)
13	BLKCK	I	Sub-code block(Q data) clock input (75Hz)
14	CLDCK	I	Sub-code block(Q data) clock input (7.35KHz)
15	SBO	I	Not connected
16	SUBQ	I	Sub-code(Q data) input
17	RST	I	Reset signal input
18	P20	O	Not used (connected to +5V)
19	P21	O	Not used (connected to +5V)
20	P22	O	Not used (connected to +5V)
21	P23	O	Not used (connected to +5V)
22	CLOSE	O	Loading motor "Close" command
23	OPEN	O	Loading motor "Open" command
24	P32	O	Not connected
25	MUTE2	O	Muting control
26	SEEK	O	Traverse serro control
27	P41	O	Not connected
28	TRV.R	O	Traverse "Reverse" command signal
29	TRV.F	O	Traverse "Forward" command signal
30	CNT4	O	Optical servo IC control signal (KICKR: Kick direction [reverse] command)
31	CNT3	O	Optical servo IC control signal (KICKF: Kick direction [forward] command)
32	CNT2	O	Optical servo IC control (TRON: Tracking servo)

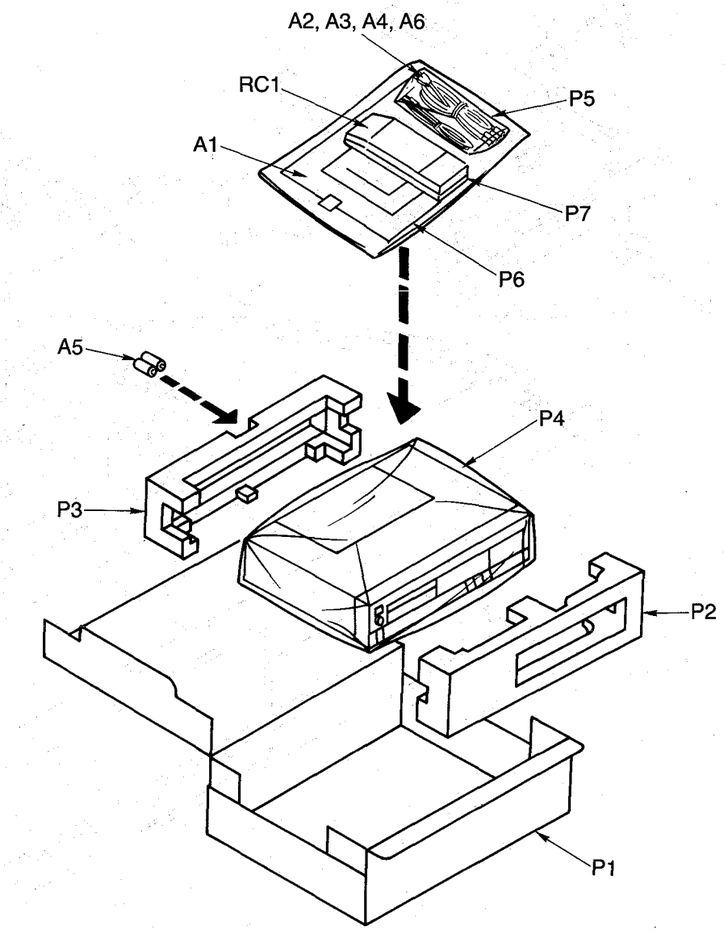
Pin No.	Mark	I/O	Function
33	VDD	I	Power supply (connected to +5V)
34	VR.R	O	Not connected
35	VR.F	O	Not connected
36	CNT1	O	Optical servo IC control signal (FOON: Focus servo)
37	P60	I	Disc holder "Open/close" detection
38	P61	I	Disc holder "Open/close" detection
39	P62	I	Not used (connected to GND)
40	P63	I	Not used (connected to GND)
41	STAT	I	Processing status input from signal processing LSI
42	COMP	O	TOC reading control (ON at "L")
43	FLOCK	I	Optical servo condition(focus) input
44	SENSE	I	Optical servo condition(track cross) input
45	RECK	I	Data receipt command signal
46	SEND	I	Data transmission command
47	ACK	I	Data discrimination signal
48	CLK	I	Data lock signal
49	D0	I	Key scan
50	D1	I	Key scan
51	D2	I	Key scan
52	D3	I	Key scan
53	PA0	I	
54	PA1	I	Not connected
55	PA2	I	
56	PA3	I	Not connected
57	PB0	I	Not connected
58	PB1	I	Key scan
59	PB2	I	Key scan
60	PB3	I	Key scan
61	OSC2	I	Clock terminal
62	OSC1	I	Clock input
63	X1	I	Optical servo condition input
64	X0	O	Not connected

• YM3404B (Digital filter)

Pin No.	Mark	I/O	Function
1	SHL	O	1DAC(ST="L"): Lch Deglitcher signal 2DAC(ST="H"): L/Rch Deglitcher signal
2	X0	O	Clock output
3	X1	I	Clock input
4	VDD2	I	Power supply (connected to +5V)
5	BCI	I	Bit clock input (input data)
6	SDSY	I	R/L signal
7	SDI	I	Data input
8	VDD1	I	Power supply (connected to +5V)

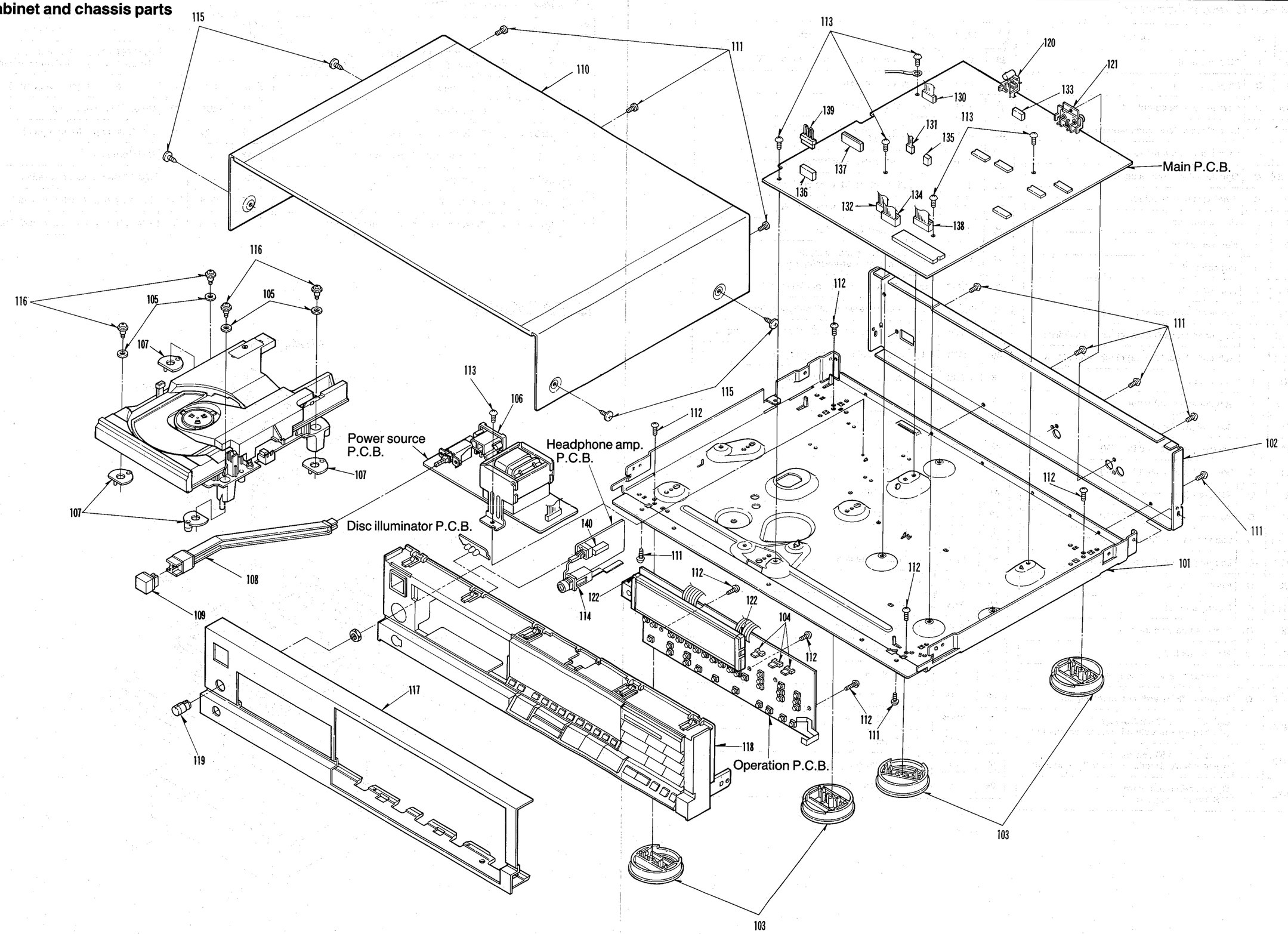
Pin No.	Mark	I/O	Function
9	DLO	O	1DAC(ST="L"): L/Rch data output terminal 2DAC(ST="H"): Lch data output terminal
10	RDO	O	Rch data output (not connected)
11	WCO	O	Output data word clock
12	BCO	O	Bit clock output (output data)
13	VSS	I	GND terminal
14	ST	I	1DAC/2DAC selector terminal
15	FEN	I	System clock selector terminal
16	SHR	O	1DAC(SP="L"): Rch deglitch signal

■ PACKING

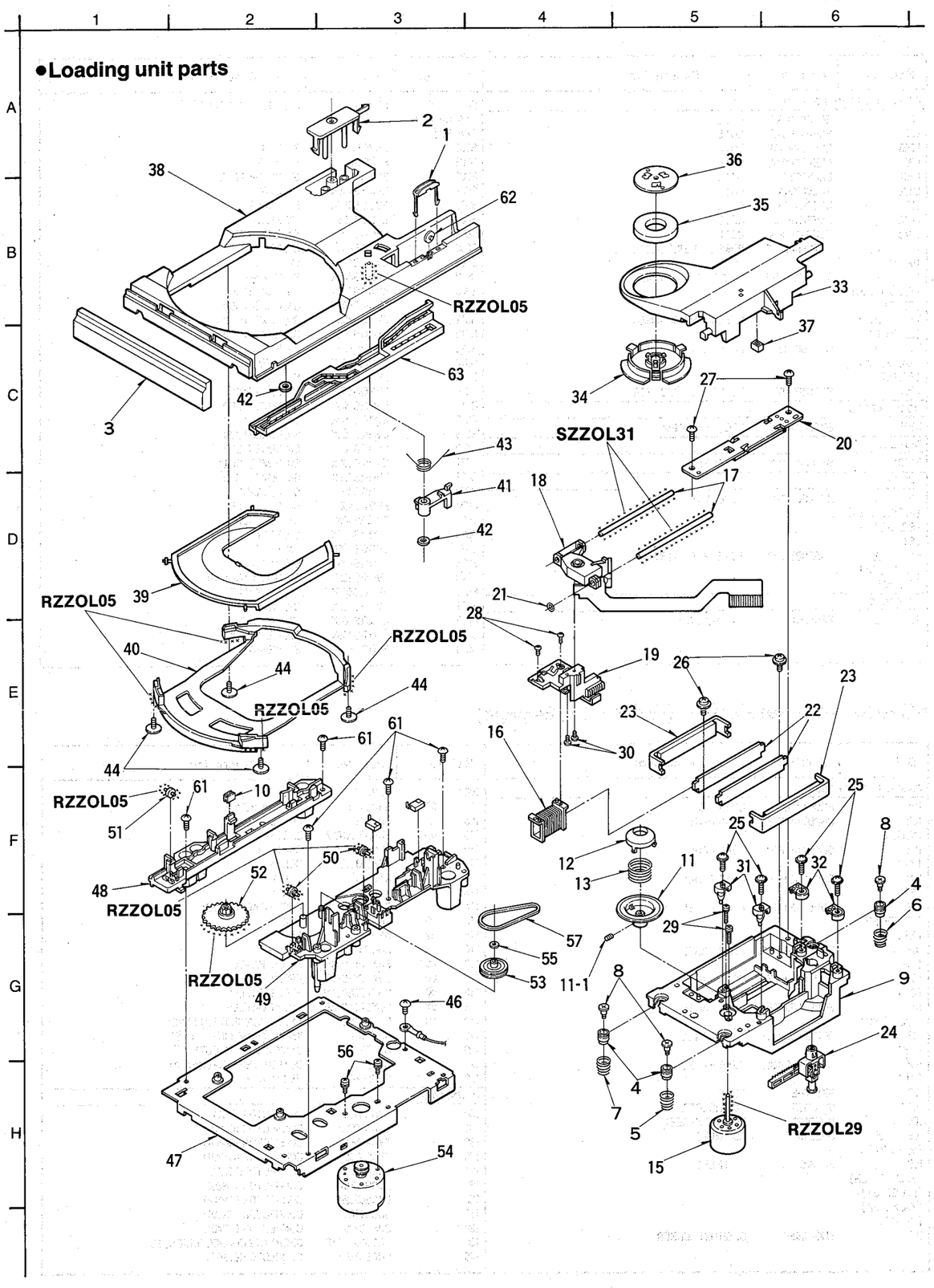


■ EXPLODED VIEWS

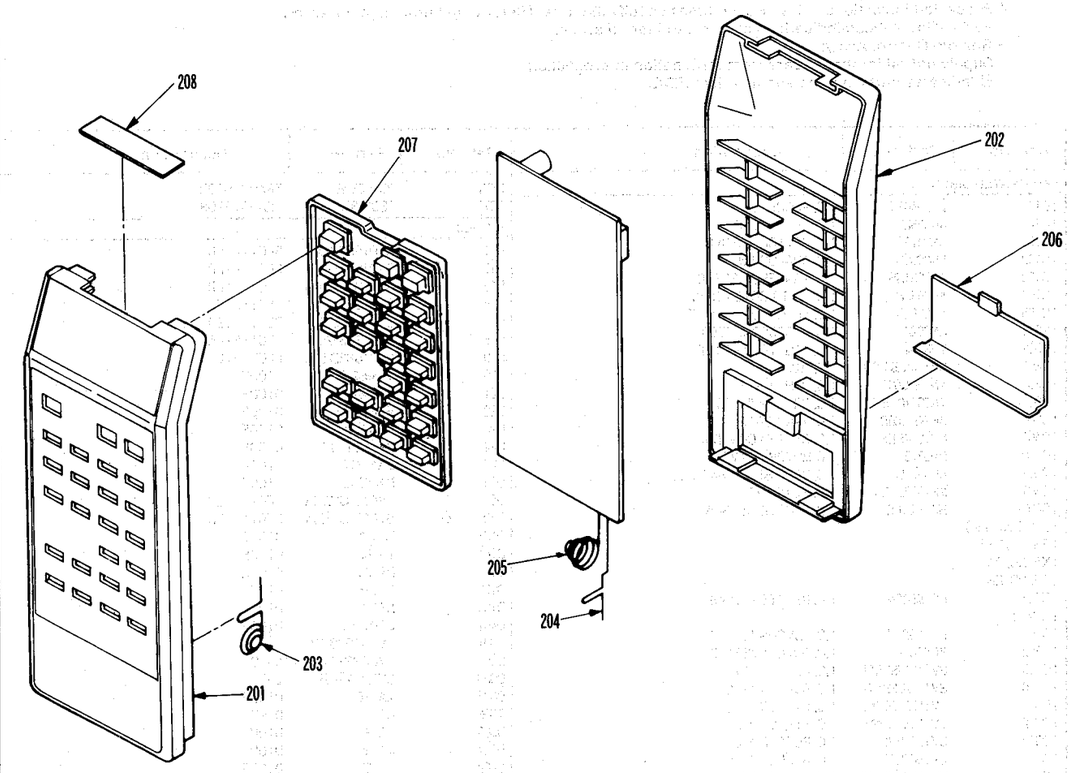
•Cabinet and chassis parts



●Loading unit parts



●Remote control unit parts



■ REPLACEMENT PARTS LIST

Notes : * Important safety notice :
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area. (Refer to the first page for area.)
Parts without these indications can be used for all areas.
* Remote Control Ass'y:
Supply period for three years from termination of production.
* Ⓜ Indicates parts that the supplied by **MESA.**

Ref. No.	Part No.	Description
INTEGRATED CIRCUITS		
IC11	LM2940T5	I.C. REGULATOR
IC12	AN6552S	I.C. REGULATOR
IC101	AN8370S	I.C. OPTICAL SERVO
IC102	MN6636S	I.C. ANALOG SW.
IC103	AN6554NS	I.C. TRAVERSE SERVO
IC104	AN6552S	I.C. FO/TR COIL DRIVE
IC105	AN6552S	I.C. FO/TR COIL DRIVE
IC301	MN6622	I.C. MICROCOMPUTER
IC302	YM3404B	I.C. DIGITAL FILTER
IC303	SVICXK5816M	I.C. 16K RAM
IC304	MN74HC00S	I.C. NAND GATE
IC305	MN53010PEH	I.C. S/P CONVERTER
IC306	MN74HC00S	I.C. NAND GATE
IC401	MN1554PEF	I.C. SYSTEM CONTROL
IC402	BA6218	I.C. MOTOR DRIVE
IC501	AN8371S	I.C. DATA SLICE AND PLL
IC601	MN15283PEJ	I.C. FL DRIVE
IC602 (E, EK, XL, EG) (EH, EF, EI) (XA, XB, PA) (PE, PC, EB)	HC-MD10E	I.C. REMOTE SENSOR
IC602 (M, MC)	HC-MD12M	I.C. REMOTE SENSOR
IC801	PCM56P-J	I.C. D/A CONVERTER
IC802	PCM56P-J	I.C. D/A CONVERTER
IC809	SVINJM5532M	I.C. BUFFER AMP.
IC810	SVINJM5532M	I.C. BUFFER AMP.
IC811	SVINJM5532M	I.C. FILTER AMP.
IC812	SVINJM5532M	I.C. FILTER AMP.
IC813	SVIM5219FP	I.C. BUFFER AMP.
IC814	SVIM5219FP	I.C. BUFFER AMP.
IC815	SVIUPD4053G1	I.C. ANALOG SW.
IC816	SVIUPD4053G1	I.C. ANALOG SW.
IC871	SVINJM4556SA	I.C. HEADPHONES AMP.
TRANSISTORS		
Q11	2SD1862-P	TRANSISTOR
Q12	2SB1240-P	TRANSISTOR
Q13	2SD1762DEF	TRANSISTOR
Q17	2SB1238Q,R	TRANSISTOR
Q18	2SC3311A-Q	TRANSISTOR
Q19	2SA1309Q,RS	TRANSISTOR
Q20	2SD1862-P	TRANSISTOR
Q21	2SB1240-P	TRANSISTOR
Q101	2SC4010-P	TRANSISTOR
Q141	2SD1862-P	TRANSISTOR
Q142	2SB1240-P	TRANSISTOR
Q161	2SD1862-P	TRANSISTOR
Q162	2SB1240-P	TRANSISTOR
Q181	2SC1846-Q	TRANSISTOR
Q182	2SA885Q	TRANSISTOR
Q351	UN4112	TRANSISTOR
Q352	2SD1862-P	TRANSISTOR
Q353	2SB1240-P	TRANSISTOR
Q401	2SC3311A-Q	TRANSISTOR
Q402	2SC3311A-Q	TRANSISTOR
Q501	UN4112	TRANSISTOR
Q601	UN4114	TRANSISTOR
Q602	UN4114	TRANSISTOR
Q803	2SD1330R	TRANSISTOR
Q804	2SD1330R	TRANSISTOR
Q805	2SD1330R	TRANSISTOR
Q806	2SD1330R	TRANSISTOR
Q807	UN4111	TRANSISTOR
Q808	2SA1309Q,RS	TRANSISTOR
Q809	UN4112	TRANSISTOR
Q871	2SD1330R	TRANSISTOR
Q872	2SD1330R	TRANSISTOR
DIODES		
D11	SVD1SR35200A	RECTIFIER
D12	SVD1SR35200A	RECTIFIER
D13	SVD1SR35200A	RECTIFIER
D14	SVD1SR35200A	RECTIFIER
D17	SVD1SR35200A	RECTIFIER
D18	SVD1SR35200A	RECTIFIER
D19	SVD1SR35200A	RECTIFIER
D20	MA4062-H	DIODE
D21	MA4062-H	DIODE
D22	MA4056-M	DIODE
D23	MA4082M	DIODE
D24	SVDMTZ33	DIODE
D25 ⚠	MA4033M	DIODE
D26 ⚠	MA4033M	DIODE
D51 ⚠	SVD1SR35200A	RECTIFIER
D52 ⚠	SVD1SR35200A	RECTIFIER
D131	MA165	DIODE
D181	MA165	DIODE
D182	MA165	DIODE
D183	MA165	DIODE
D184	MA165	DIODE
D401	MA4033M	DIODE
D601	SVGDPG7851Y	L.E.D
D602	SVGDPG7851Y	L.E.D
D603	SVGDAY7851	L.E.D
D604	MA165	DIODE
D605	MA165	DIODE
D606	MA165	DIODE
D607	MA165	DIODE
D608	MA165	DIODE
D609	MA165	DIODE
D610	MA165	DIODE
D611	MA165	DIODE
D612	MA165	DIODE
D629	SVDSLR-54MW4	L.E.D
D630	SVDSLR-54MW4	L.E.D
D631	SVDSLR-54MW4	L.E.D
D801	MA165	DIODE
D805	MA165	DIODE
D806	MA165	DIODE
D807	MA165	DIODE
D808	MA165	DIODE
D809	MA165	DIODE
D810	MA165	DIODE
D811	MA165	DIODE
D812	MA165	DIODE
I.C.PROTECTORS		
ICP1 ⚠ (EK, XA, XB) (PA, PE, PC)	SRUF38	I.C.PROTECTOR
ICP2 ⚠ (EK, XA, XB) (PA, PE, PC)	SRUF38	I.C.PROTECTOR
VARIABLE RESISTORS		
VR101	EVND3AA00B53	V.R, BEST EYE ADJ.
VR102	EVND3AA00B14	V.R, TR GAIN ADJ.
VR103	EVND3AA00B14	V.R, TR OFFSET ADJ.
VR104	EVND3AA00B14	V.R, FO GAIN ADJ.
VR105	EVND3AA00B14	V.R, FO OFFSET ADJ.
VR106	EVND3AA00B53	V.R, TR BALANCE ADJ.
VR501	EVN38CA00B13	V.R, PLL ADJ.
VR871	EVUN1A022A14	V.R, HEADPHONE LEVEL
VR1001	EVN38CA00B15	V.R, OFFSET VOLTAGE ADJ.
VR1002	EVN38CA00B15	V.R, OFFSET VOLTAGE ADJ.

Ref. No.	Part No.	Description
COILS AND TRANSFORMERS		
L301	ELEPK1R0KA	COIL
L302	ELEPK3R3KA	COIL
L303	ELEPK2R2KA	COIL
L304	ELEPK1R0KA	COIL
L801	ELEV820KA	COIL
L802	ELEV820KA	COIL
L871	ELEPK1R0KA	COIL
L872	ELEPK1R0KA	COIL
L873	ELEPK1R0KA	COIL
T1 ⚠ (M, MC)	SLTD5K060SC	POWER TRANSFORMER
T1 ⚠ (E, EG, EB, EH) (EF, EI)	SLTD5K061SE	POWER TRANSFORMER
T1 ⚠ (EK, XL)		POWER TRANSFORMER
T1 ⚠ (XA, XB, PA) (PE, PC)	SLTD5K063SX	POWER TRANSFORMER
T301	SLZS10VN17	PULSE TRANSFORMER
OSCILLATORS		
X301	SVQAT1693ATA	OSC., 16.9344MHZ
DISPLAYS		
FL601	SAD16MT09GK	DISPLAY
FUSES		
F1 ⚠ (E, EK, XL, EG) (EB, EH, EF) (EI)	XBA2C012TB0	FUSE, 250V, T125mA
F1 ⚠ (XA, XB, PA) (PE, PC)	XBA2C025TB0	FUSE, 250V, T250mA
SWITCHES		
S1 ⚠	ESB8249V	SW. POWER
S2 ⚠ (XA, XB, PA) (PE, PC)	SSR187-1	SW, VOLTAGE SELECTOR
S101	SSPD15	SW, REST
S102	SSPD16	SW, REST
S601	EVQQS405K	SW, OPEN/CLOSE
S602	EVQQS405K	SW, STOP
S603	EVQQS405K	SW, PAUSE
S604	EVQQS405K	SW, PLAY
S605	EVQQS405K	SW, PROGRAM
S606	EVQQS405K	SW, RECALL
S607	EVQQS405K	SW, TIME
S608	EVQQS405K	SW, M.SCAN
S609	EVQQS405K	SW, NUMERIC(1)
S610	EVQQS405K	SW, NUMERIC(2)
S611	EVQQS405K	SW, NUMERIC(3)
S612	EVQQS405K	SW, NUMERIC(4)
S613	EVQQS405K	SW, NUMERIC(5)
S614	EVQQS405K	SW, CLEAR
S615	EVQQS405K	SW, F.INDEX
S616	EVQQS405K	SW, F.SEARCH
S617	EVQQS405K	SW, NUMERIC(6)
S618	EVQQS405K	SW, NUMERIC(7)
S619	EVQQS405K	SW, NUMERIC(8)
S620	EVQQS405K	SW, NUMERIC(9)
S621	EVQQS405K	SW, NUMERIC(10)
S622	EVQQS405K	SW, NUMERIC(0)
S623	EVQQS405K	SW, R.INDEX
S624	EVQQS405K	SW, R.SEARCH
S625	EVQQS405K	SW, SIDE A/B
S626	EVQQS405K	SW, EDIT
S627	EVQQS405K	SW, PEAK
S628	EVQQS405K	SW, DISPLAY
S629	EVQQS405K	SW, NUMERIC(+10)
S630	EVQQS405K	SW, FF. SEARCH
S631	EVQQS405K	SW, A/B REPEAT
S632	EVQQS405K	SW, RANDOM
S633	EVQQS405K	SW, FR. INDEX
S634	EVQQS405K	SW, REPEAT

●Cabinet and chassis parts (Refer to 23, 24 page)

Ref. No.	Part No.	Description
CABINET AND CHASSIS		
101	SKUD191ZF0A	CHASSIS
102 (M, MC)	SGPD770ZF0B	REAR PANEL
102 (XA)	SGPD770ZF1C	REAR PANEL
102 (E)	SGPLP550-KE	REAR PANEL
102 (EB, EH, EF) (EI)	SGPLP550-KEB	REAR PANEL
102 (EG)	SGPLP550-KEG	REAR PANEL
102 (EK)	SGPLP550-KEK	REAR PANEL
102 (PA, PE, PC)	SGPLP550-KPA	REAR PANEL
102 (XB)	SGPLP550-KXB	REAR PANEL
102 (XL)	SGPLP550-KXL	REAR PANEL
103	SKLD8-E	FOOT
104	SHRD165	LED HOLDER
105	SHGD123	RUBBER SPACER
106 ⚠ (M, MC, XL)	SJSD16	AC INLET
106 ⚠ (E, EK, EG, EB) (EH, EF, EI) (XA, XB, PA) (PE, PC)	SJS9236	AC INLET
107	SHGD122-1	CUSHION RUBBER
108	SUBD14	ROD
109 Ⓚ	SBC666-5	BUTTON, POWER
109 Ⓢ	SBC666	BUTTON, POWER
110 Ⓚ	SKCD590KE1A	CABINET
110 Ⓢ	SKCD590SW1A	CABINET
111	XTB3+8JFZ	SCREW
112	XTB3+8G	SCREW
113	XTB3+8J	SCREW
114	SJJ126B	JACK(HEADPHONES)
115 Ⓚ	SNE2129-1	SCREW
115 Ⓢ	SNE2129	SCREW
116	SHDD4	SCREW
117 Ⓚ	SGWLP550-KM	FRONT PANEL
117 Ⓢ	SGWLP550-SE	FRONT PANEL
118 Ⓚ	SGYLP550-KM	FRONT GRILLE
118 Ⓢ	SGYLP550-SE	FRONT GRILLE
119 Ⓚ	SBN1161-2	KNOB, HEADPHONES LEVEL
119 Ⓢ	SBN1161-3	KNOB, HEADPHONES LEVEL
120	SJFD7	JACK (DIGITAL OUT)
121	SJFD4	OUTPUT TERMINAL(PHONO)
122	SHRD166	FL HOLDER
CONNECTORS		
130	SJSD0605	CONNECTOR (FC11)
131	EMCS0350Z	CONNECTOR (CN103)
132	EMCS0550Z	CONNECTOR (CN401)
133	EMCS0750Z	CONNECTOR (CN801)
134	SJSD0905	CONNECTOR(FC402)
135	EMCS0250Z	CONNECTOR (CN351)
136	EMCS0552M	CONNECTOR (CN102)
137	SJSD1709	CONNECTOR (CN101)
138	SJSD0905	CONNECTOR (FC401)
139	SRDJ001N14E	SHORTING CONNECTOR(CN102)
140	EMCS0750Z	CONNECTOR(CN871)

●Loading unit parts (Refer to 25 page)

Ref. No.		Part No.	Description
LOADING MECHANICAL			
1		SHRD150	ROLLER HOLDER
2		SHRD144	COVER WITH CLAW
3	Ⓚ	SGXD3240ZK0C	ORNAMENT PANEL
3	Ⓢ	SGXD3240MA0A	ORNAMENT PANEL
4		SHGD110	CUSHION RUBBER
5		SUSD126	SPRING (RED)
6		SUSD127	SPRING (BLUE)
7		SUSD128	SPRING (YELLOW)
8		SFXGB20-01	SCREW
9		SISD13-3	TRAVERSE BASE
10		SFGZB63M51	CUSHION RUBBER
11		SD0D28-1E	TURNTABLE
11-1		XXE26D5	SCREW
12		SD0D29-2	RING
13		SRQA010N04	SPRING
15		SJGDRF310T	SPINDLE MOTOR
16		S0RD21E-1	TRAVERSE COIL
17		SUXD78-2	GUIDE SHAFT
18	⚠	S0AD60A-1	OPTICAL PICKUP
19		EWSL11A00000	COIL HOLDER
20		EWS7G0A00Q53	RESISTANCE UNIT
21		SHGD131	STOPPER
22		S0YD8E-1	YOKE (A)
23		S0YD9	YOKE (B)
24		SHRD23-2	LOCK SHAFT
25		XTV3+12GFZ	SCREW
26		SNSD27	SCREW
27		XTV3+8G	SCREW
28		XTV2+4G	SCREW
29		XYM2+C12	SCREW
30		XQN17+C6	SCREW
31		SHRD136	GUIDE SHAFT HOLDER(A)
32		SHRD137	GUIDE SHAFT HOLDER(B)
33		SIRD42-2	CLAMPER
34		SIRD51	HOLDER
35		S0MD4	MAGNET
36		S0YD2	YOKE
37		SHGD119	CUSHION RUBBER
38		SIRLP990-KM	DISC HOLDER
39		SIRD98	DISC TRAY
40		SIRD99	TRAY BASE
41		SIRD96	LOCK LEVER
42		SFUMZ15R61	WASHER
43		SUSD83	SPRING
44		SFXGQ06N01	SCREW
46		XTV3+6BFN	SCREW
47		SIWLP320-KM	LOADING BASE
48		SIRD43-3	BRACKET(A), LOADING BASE
49		SIRLP320KM3	BRACKET(B), LOADING BASE
50		SDRD2	ROLLER
51		SDRD6	ROLLER
52		SDGD38	MAIN GEAR
53		SDGD39-2	PULLEY GEAR
54		SMNLP320-KM	LOADING MOTOR
55		SHWD20	WASHER
56		XYN26+T4	SCREW
57		SMBD3	DRIVE BELT
61		XTV3+8JFZ	SCREW
62		SDRD12	ROLLER
63		SIRD40-2	RACK GEAR

●Remote control unit parts (Refer to 26 page)

Ref. No.		Part No.	Description
INTEGRATED CIRCUITS			
IC1 (E, EK, XL, EG) (EB, EH, EF) (EI, XA, XB) (PA, PE, PC)		MN6030B	I.C. REMOTE SIGNAL
IC1 (M, MC)		MN6030CA	I.C. REMOTE SIGNAL
TRANSISTORS			
Q1		UN1231	TRANSISTOR
DIODES			
D1		LN66	L.E.D
D2		MA154WK	DIODE
D4		MA154WK	DIODE
D6		MA154WA	DIODE
OSCILLATOR			
X1 (E, EK, XL, EG) (EB, EH, EF) (EI, XA, XB) (PA, PE, PC)		CSB420PB1	OSCILLATOR
X1 (M, MC)		CSB455EB1	OSCILLATOR
RESISTORS			
R1		ERDS2TJ1R0	CARBON, 1Ω, 1/4W
CAPACITORS			
C1 (M, MC)		ECKD1H101KB	CERAMIC, 100PF, 50V
C1 (E, EK, XL, EG) (EB, EH, EF) (EI, XA, XB)		ECKD1H471KB	CERAMIC, 470PF, 50V
(PA, PE, PC) C2 (M, MC)		ECKD1H101KB	CERAMIC, 100PF, 50V
C2 (E, EK, XL, EG) (EB, EH, EF) (EI, XA, XB) (PA, PE, PC)		ECKD1H121KB	CERAMIC, 120PF, 50V
C3		ECEA0GK101	ELECTROLYTIC, 100μF, 4V
MECHANISM PARTS			
201 (M, MC)	Ⓚ	UR64VCS532	UPPER CABINET
201 (E, EK, XL, EG) (EB, EH, EF) (EI, XA, XB) (PA, PE, PC)	Ⓚ	UR64VCS534	UPPER CABINET
201	Ⓢ	UR64VCS575	UPPER CABINET
202	Ⓚ	UR64CS803A	LOWER CABINET
202	Ⓢ	UR64CS803B	LOWER CABINET
203		UR64TD374	BATTERY TERMINAL(COMMON)
204		UR64TD812	BATTERY TERMINAL(+)
205		UR64TD813	BATTERY TERMINAL(-)
206	Ⓚ	UR64EC804	BATTERY COVER
206	Ⓢ	UR64EC804A	BATTERY COVER
207		UR64CT811A	BUTTON
208		UR52SB327	PLATE
REMOTE CONTROL ASS'Y			
RC1 (M, MC)	Ⓚ	EUR64781	REMOTE CONT.(REF TO NOTE)
RC1 (E, EK, XL, EG) (EB, EH, EF) (EI, XA, XB) (PA, PE, PC)	Ⓚ	EUR64782	REMOTE CONT.(REF TO NOTE)
RC1	Ⓢ	EUR64783	REMOTE CONT.(REF TO NOTE)

●Packing (Refer to 22 page)

Ref. No.		Part No.	Description
PACKING MATERIAL			
P1 (M, E, EK, XL) (EG, EB, EH) (EI, XA, XB) (PA, PE, PC)	Ⓚ	SPND259	CARTON BOX
P1 (MC)	Ⓚ	SPND260	CARTON BOX
P1 (EF)	Ⓚ	SPND261	CARTON BOX
P1 (E, EK, EG, EB) (EH, EI)	Ⓢ	SPND269	CARTON BOX
P1 (EF)	Ⓢ	SPND270	CARTON BOX
P2		SPSD142	PAD(FRONT)
P3		SPSD143	PAD(REAR)
P4		XZB60X60A010	PROTECTION BAG(UNIT)
P5		XZB26X17C03	PROTECTION BAG(CORDS)
P6		XZB23X35C03	PROTECTION BAG(INST. MANUAL)
P7		XZB10X26B05S	PROTECTION BAG(REMOTE CONT.)
ACCESSORIES			
A1 (M)		SQUD291	INSTRUCTION MANUAL
A1 (XL, XA)		SQUD293	INSTRUCTION MANUAL
A1 (EG)		SQUD295	INSTRUCTION MANUAL
A1 (EI)		SQUD297	INSTRUCTION MANUAL
A1 (EK)		SQUD298	INSTRUCTION MANUAL
A1		SQULP550-KE	INSTRUCTION MANUAL
(E, EB, EH, EF) A1		SQULP550-KMC	INSTRUCTION MANUAL
(MC) A1		SQULP550-KPA	INSTRUCTION MANUAL
(PA, PE, PC) A1		SQULP550-KXB	INSTRUCTION MANUAL
(XB) A2	⚠	SFDAC05G02	POWER CORD
(EK) A2	⚠	SJA168	POWER CORD
(XA, PA, PE) (PC) A2	⚠	SJA172	POWER CORD
(MC) A2	⚠	SJA173	POWER CORD
(XL) A2	⚠	SJA175-1	POWER CORD Ⓜ
(M) A2	⚠	SJA183	POWER CORD
(XB) A2	⚠	SJA187	POWER CORD
(E, EG, EB, EH) (EF, EI) A3	⚠	RJP120ZBS-H	AC PLUG ADAPTOR
(XA, XB, PA) (PE, PC) A4		SJP2249-1	OUTPUT CORD
A5 (E, EK, XL, EG) (EB, EH, EF) (EI, XA, XB) (PA, PE, PC)		UM-4NE	BATTERY
A5 (M, MC)		UM-4NEP	BATTERY
A6		SJPD19	DIGITAL OUTPUT CORD

■ RESISTOR & CAPACITORS

Notes: * Important safety notice:
Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
* Bracketed indications in Ref. No. columns specify the area.
Parts without these indications can be used for all areas.

Numbering System of Resistor

Example

ERD	25	F	J	102
Type	Wattage	Shape	Tolerance	Value
ERX	2	AN	J	471
Type	Wattage	Shape	Tolerance	Value 47x10¹ (ohm)

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity
ECEA	50	M		330
Type	Voltage	Peculiarity		Value (33x10⁰ microfarad)

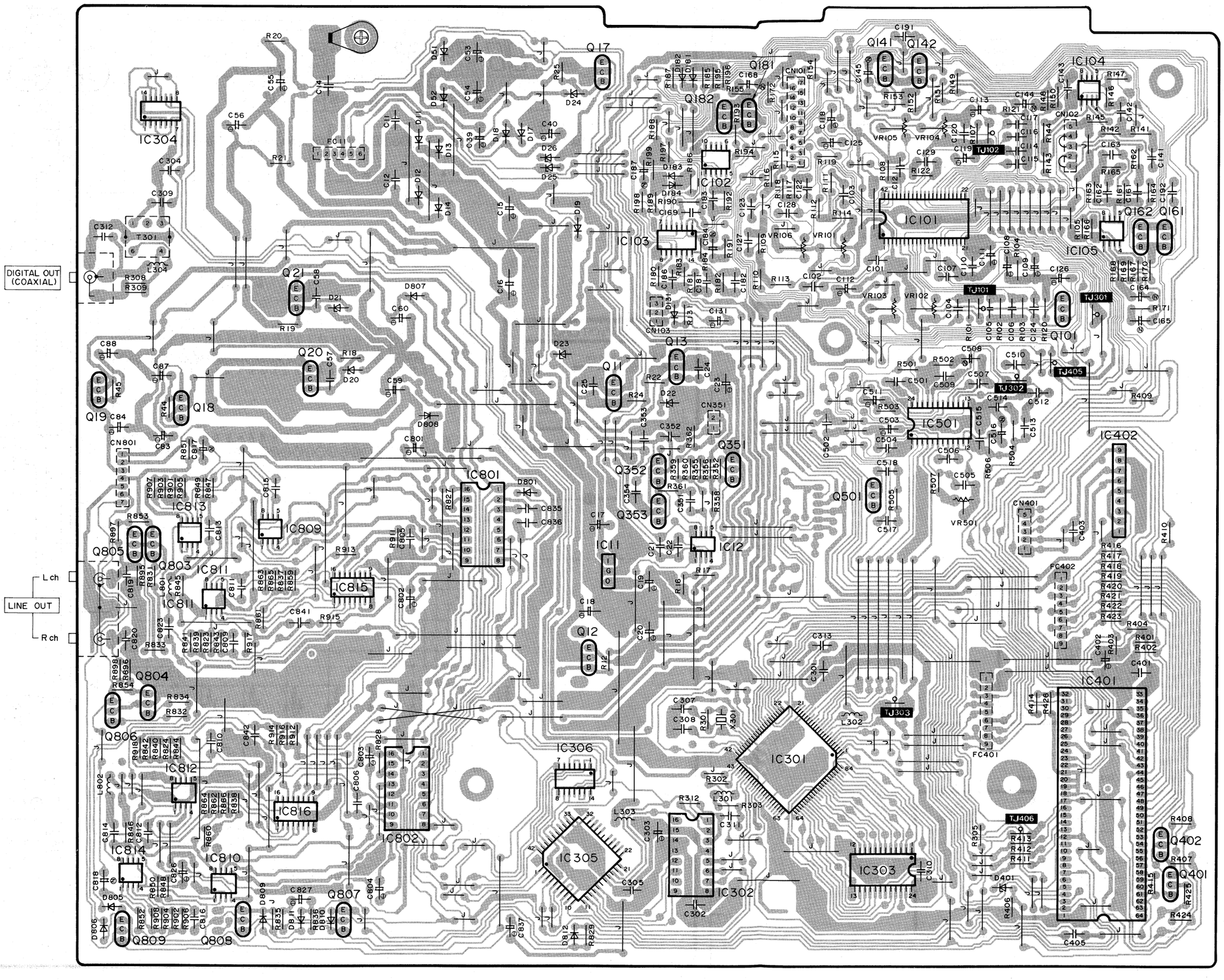
Resistor Type	Wattage	Tolerance
ERD : Carbon ERG : Metal Oxide ERX : Metal Film ERQ : Fuse Type Metal ERD□ L : Carbon (chip) ERO□ K : Metal Film (chip) ERC : Solid	10 : 1/8W 12 : 1/2W 25 : 1/4W 1A : 1W 18 : 1/8W S2 : 1/4W S1 : 1/2W 2F : 1/4W 50 : 1/2W 2A : 2W	J : ±5% F : ±1% G : ±2% K : ±10%

Capacitor Type	Voltage	Tolerance
ECE : Electrolytic ECCD : Ceramic ECKD : Ceramic ECQM : Polyester ECQP : Polypropylene ECG : Ceramic ECEA□□□N: Non Polar Electrolytic QCU□ : Ceramic (Chip Type) ECUX : Ceramic (Chip Type) ECF : Semiconductor EECW : Liquid electrolyte double layer capacitor	0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1H : 50V 1V : 35V 50 : 50V 05 : 50V 2H : 500V 2A : 100V 1 : 100V KC : 400V AC KC : 125VAC (UL) 1J : 63V	C : ±0.25pF J : ±5% K : ±10% Z : +80% −20% P : +100% −0% M : ±20% D : ±0.5pF G : ±2%

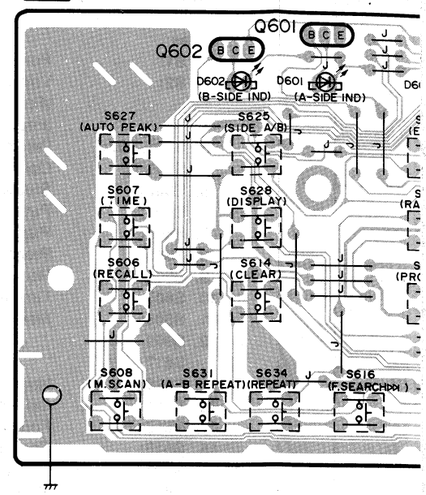
Ref. No.	Part No.	Value.
RESISTORS(VALUE,WATTAGE)		
R12	ERDS2TJ101	100 1/4
R16	ER0S2TKG6801	6.8K 1/4
R17	ER0S2TKG6801	6.8K 1/4
R18	ERDS2TJ331	330 1/4
R19	ERDS2TJ331	330 1/4
R20	ERDS2TJ471	470 1/4
R21	ERDS2TJ471	470 1/4
R22	ERDS2TJ471	470 1/4
R24	ERDS2TJ471	470 1/4
R25	ERDS2TJ222	2.2K 1/4
R44	ERDS2TJ102	1K 1/4
R45	ERDS2TJ102	1K 1/4
R101	ERDS2TJ154	150K 1/4
R102	ERDS2TJ332	3.3K 1/4
R102	ERDS2TJ472	4.7K 1/4
R103	ERDS2TJ472	4.7K 1/4
R104	ERDS2TJ223	22K 1/4
R104	ERDS2TJ683	68K 1/4
R105	ERDS2TJ334	330K 1/4
R107	ERDS2TJ683	68K 1/4
R109	ERDS2TJ822	8.2K 1/4
R110	ERDS2TJ682	6.8K 1/4
R111	ERDS2TJ682	6.8K 1/4
R112	ERDS2TJ822	8.2K 1/4
R113	ERDS2TJ152	1.5K 1/4
R114	ERDS2TJ152	1.5K 1/4
R115	ERDS2TJ102	1K 1/4
R116	ERDS2TJ182	1.8K 1/4
R117	ERDS2TJ182	1.8K 1/4
R118	ERDS2TJ102	1K 1/4
R119	ERDS2TJ102	1K 1/4
R120	ERDS2TJ120	12 1/4
R121	ERDS2TJ393	39K 1/4
R122	ERDS2TJ471	470 1/4
R131	ERDS2TJ270	27 1/4
R141	ERDS2TJ102	1K 1/4
R142	ERDS2TJ333	33K 1/4
R143	ERDS2TJ124	120K 1/4
R144	ERDS2TJ333	33K 1/4
R145	ERDS2TJ153	15K 1/4
R146	ERDS2TJ122	1.2K 1/4
R147	ERDS2TJ682	6.8K 1/4
R148	ERDS2TJ104	100K 1/4
R149	ERDS2TJ152	1.5K 1/4
R150	ERDS2TJ103	10K 1/4
R151	ERDS2TJ101	100 1/4
R152	ERDS2TJ153	15K 1/4
R153	ERDS2TJ270	27 1/4
R154	ERDS2TJ3R3	3.3 1/4
R155	ERDS2TJ330	33 1/4
R161	ERDS2TJ333	33K 1/4
R162	ERDS2TJ222	2.2K 1/4
R163	ERDS2TJ333	33K 1/4
R164	ERDS2TJ153	15K 1/4
R165	ERDS2TJ122	1.2K 1/4
R166	ERDS2TJ102	1K 1/4
R167	ERDS2TJ681	680 1/4
R168	ERDS2TJ272	2.7K 1/4
R169	ERDS2TJ392	3.9K 1/4
R170	ERDS2TJ101	100 1/4
R171	ERDS2TJ270	27 1/4
R172	ERDS2TJ3R3	3.3 1/4
R180	ERDS2TJ474	470K 1/4
R181	ERDS2TJ471	470 1/4
R182	ERDS2TJ564	560K 1/4
R183	ERDS2TJ564	560K 1/4
R184	ERDS2TJ223	22K 1/4
R185	ERDS2TJ473	47K 1/4
R186	ERDS2TJ473	47K 1/4
R187	ERDS2TJ473	47K 1/4
R188	ERDS2TJ473	47K 1/4
R189	ERDS2TJ562	5.6K 1/4
R190	ERDS2TJ123	12K 1/4
R191	ERDS2TJ154	150K 1/4
R192	ERDS2TJ824	820K 1/4
R193	ERDS2TJ101	100 1/4
R195	ERDS2TJ103	10K 1/4
R196	ERDS2TJ103	10K 1/4
R197	ERDS2TJ473	47K 1/4
R198	ERDS2TJ473	47K 1/4
R199	ERDS2TJ473	47K 1/4
R301	ERDS2TJ121	120 1/4
R302	ERDS2TJ122	1.2K 1/4
R303	ERDS2TJ391	390 1/4
R305	ERDS2TJ221	220 1/4
R308	ERDS2TJ151	150 1/4
R309	ERDS2TJ151	150 1/4
R312	ERDS2TJ104	100K 1/4
R352	ERDS2TJ334	330K 1/4
R355	ERDS2TJ333	33K 1/4
R356	ERDS2TJ333	33K 1/4
R358	ERDS2TJ103	10K 1/4
R359	ERDS2TJ274	270K 1/4
R360	ERDS2TJ123	12K 1/4
R361	ERDS2TJ101	100 1/4
R362	ERDS2TJ8R2	8.2 1/4
R401	ERDS2TJ472	4.7K 1/4
R402	ERDS2TJ472	4.7K 1/4
R403	ERDS2TJ472	4.7K 1/4
R404	ERDS2TJ472	4.7K 1/4
R406	ERDS2TJ221	220 1/4
R407	ERDS2TJ102	1K 1/4
R408	ERDS2TJ102	1K 1/4
R409	ERDS2TJ472	4.7K 1/4
R410	ERDS2TJ472	4.7K 1/4
R411	ERDS2TJ472	4.7K 1/4
R412	ERDS2TJ472	4.7K 1/4
R413	ERDS2TJ472	4.7K 1/4
R414	ERDS2TJ472	4.7K 1/4
R415	ERDS2TJ104	100K 1/4
R416	ERDS2TJ221	220 1/4
R417	ERDS2TJ221	220 1/4
R418	ERDS2TJ221	220 1/4
R419	ERDS2TJ221	220 1/4
R420	ERDS2TJ221	220 1/4
R421	ERDS2TJ221	220 1/4
R422	ERDS2TJ221	220 1/4
R423	ERDS2TJ221	220 1/4
R424	ERDS2TJ472	4.7K 1/4
R425	ERDS2TJ220	22 1/4
R426	ERDS2TJ472	4.7K 1/4
R501	ERDS2TJ224	220K 1/4
R502	ERDS2TJ562	5.6K 1/4
R503	ERDS2TJ474	470K 1/4
R504	ERDS2TJ221	220 1/4
R505	ERDS2TJ104	100K 1/4
R506	ERDS2TJ333	33K 1/4
R507	ERDS2TJ102	1K 1/4
R601	ERDS2TJ331	330 1/4
R602	ERDS2TJ472	4.7K 1/4
R603	ERDS2TJ472	4.7K 1/4
R604	ERDS2TJ472	4.7K 1/4
R605	ERDS2TJ472	4.7K 1/4
R606	ERDS2TJ472	4.7K 1/4
R607	ERDS2TJ472	4.7K 1/4
R608	ERDS2TJ472	4.7K 1/4
R609	ERDS2TJ472	4.7K 1/4
R610	ERDS2TJ472	4.7K 1/4
R611	ERDS2TJ472	4.7K 1/4
R612	ERDS2TJ472	4.7K 1/4
R613	ERDS2TJ472	4.7K 1/4
R614	ERDS2TJ472	4.7K 1/4
R615	ERDS2TJ472	4.7K 1/4
R616	ERDS2TJ105	1M 1/4
R625	ERDS2TJ221	220 1/4
R823	ERDS2TJ392	3.9K 1/4
R824	ERDS2TJ392	3.9K 1/4
R827	ERDS2TJ564	560K 1/4
R828	ERDS2TJ564	560K 1/4
R829	ERDS2TJ473	47K 1/4
R831	ERDS2TJ102	1K 1/4
R832	ERDS2TJ102	1K 1/4
R833	ERDS2TJ102	1K 1/4
R834	ERDS2TJ102	1K 1/4
R835	ERDS2TJ103	10K 1/4
R836	ERDS2TJ102	1K 1/4
R837	ER0S2TKF1202	12K 1/4
R838	ER0S2TKF1202	12K 1/4
R839	ERDS2TJ823	82K 1/4
R840	ERDS2TJ823	82K 1/4
R841	ERDS2TJ103	10K 1/4
R842	ERDS2TJ103	10K 1/4
R843	ERDS2TJ824	820K 1/4
R844	ERDS2TJ824	820K 1/4
R845	ERDS2TJ182	1.8K 1/4
R846	ERDS2TJ182	1.8K 1/4
R847	ERDS2TJ821	820 1/4
R848	ERDS2TJ821	820 1/4
R849	ERDS2TJ182	1.8K 1/4
R850	ERDS2TJ182	1.8K 1/4
R851	ERDS2TJ271	270 1/4
R852	ERDS2TJ271	270 1/4
R853	ERDS2TJ271	270 1/4
R854	ERDS2TJ271	270 1/4
R859	ER0S2CKF4702	47K 1/4
R860	ER0S2CKF4702	47K 1/4
R861	ER0S2TKF1001	1K 1/4
R862	ER0S2TKF1001	1K 1/4
R863	ER0S2TKF1202	12K 1/4
R864	ER0S2TKF1202	12K 1/4
R865	ER0S2TKF1202	12K 1/4
R866	ER0S2TKF1202	12K 1/4
R871	ERDS2TJ103	10K 1/4
R872	ERDS2TJ103	10K 1/4
R873	ERDS2TJ123	12K 1/4
R874	ERDS2TJ123	12K 1/4
R875	ERDS2TJ104	100K 1/4
R876	ERDS2TJ104	100K 1/4
R885	ERDS2TJ222	2.2K 1/4
R886	ERDS2TJ222	2.2K 1/4
R887	ERDS2TJ680	68 1/4
R888	ERDS2TJ680	68 1/4
R889	ERDS2TJ470	47 1/4
R890	ERDS2TJ470	47 1/4
R895	ERDS2TJ104	100K 1/4
R896	ERDS2TJ104	100K 1/4
R897	ERDS2TJ121	120 1/4
R898	ERDS2TJ121	120 1/4
R901	ERDS2TJ101	100 1/4
R902	ERDS2TJ101	100 1/4
R903	ERDS2TJ331	330 1/4
R904	ERDS2TJ331	330 1/4
R905	ERDS2TJ103	10K 1/4
R906	ERDS2TJ103	10K 1/4
R907	ERDS2TJ333	33K 1/4
R908	ERDS2TJ333	33K 1/4
R911	ERDS2TJ332	3.3K 1/4
R912	ERDS2TJ332	3.3K 1/4
R913	ERDS2TJ332	3.3K 1/4
R914	ERDS2TJ332	3.3K 1/4
R915	ERDS2TJ472	4.7K 1/4
R916	ERDS2TJ472	4.7K 1/4
R917	ERDS2TJ472	4.7K 1/4
R918	ERDS2TJ472	4.7K 1/4
R1001	ER0S2TKG1003	100K 1/4
R1002	ER0S2TKG1003	100K 1/4
R1003	ER0S2TKG1003	100K 1/4
R1004	ER0S2TKG1003	100K 1/4
CAPACITORS(VALUE,VOLTAGE)		
C1 ⚠	ECKDKC103PF2	0.01 125
C11 ⚠	ECFD1H103KB	0.01 50
C12 ⚠	ECFD1H103KB	0.01 50
C14	ECFD1E104ZF	0.1 25
C15	ECEA1CU332	3300 16
C16	ECEA1CU332	3300 16
C17	ECEA1CU470	47 16
C18	ECEA1CU470	47 16
C19	ECEA0JS331	330 6.3

Ref. No.	Part No.	Value.
C20	ECEA0JS331	330 6.3
C21	ECFD1E104ZF	0.1 25
C22	ECFD1E104ZF	0.1 25
C23	ECEA0JS331	330 6.3
C24	ECFD1H103KB	0.01 50
C25	ECFD1H103KB	0.01 50
C39	ECEA50V330V	330 50
C40	ECEA50V330V	330 50
C53	ECEA1CU331	330 16
C54	ECEA1CU331	330 16
C55	ECEA1CU221	220 16
C56	ECEA1CU221	220 16
C57	ECFD1H103KB	0.01 50
C58	ECFD1H103KB	0.01 50
C59	REC1C101M0T	100 16
C60	REC1C101M0T	100 16
C83	ECEA1AU101	100 10
C84	ECEA1AU101	100 10
C87	REC1C101M0T	100 16
C88	REC1C101M0T	100 16
C101	ECQV1H104JZ	0.1 50
C102	ECKD1H102KB	0.001 50
C103	ECKD1H102KB	0.001 50
C104	ECKD1H681K	680P 50
C105	ECKD1H471KB	470P 50
C106	ECKD1H471KB	470P 50
C107	ECCD1H220K	22P 50
C108	ECEA1HK0R1	0.1 50
C109	ECEA1HK010	1 50
C110	ECQV1H104JZ	0.1 50
C111	ECEA1HK100	10 50
C112	ECEA1HK100	10 50
C113	ECEA1HK010	1 50
C114	RCBS1C182MXY	0.0018 16
C115	ECKD1H682KB	0.0068 50
C116	ECQM1H333JZ	0.033 50
C117	RCBS1H221KBY	220P 50
C118	ECEA1HK010	1 50
C119	ECEA0JK220	22 6.3
C120	RCBS1H681KBY	680P 50
C121	ECFD1H103KB	0.01 50
C122	ECBT1H101KB5	100P 50
C123	ECBT1H101KB5	100P 50
C124	ECKD1H222KB	0.0022 50
C125	ECEA0JK470	47 6.3
C126	ECEA0JK470	47 6.3
C127	ECKD1H102KB	0.001 50
C128	ECKD1H102KB	0.001 50
C129	ECKD1H681K	680P 50
C131	ECEA0JK221	220 6.3
C141	ECQM1H153JZ	0.015 50
C142	ECQM1H122JZ	0.0012 50
C143	ECQM1H473JZ	0.047 50
C144	ECEA1HKN2R2	2.2 50
C145	ECEA1HKNR22	0.22 50
C161	ECQM1H153JZ	0.015 50
C162	ECKD1H681K	680P 50
C163	ECQM1H103JZ	0.01 50
C164	ECEA1HKN3R3	3.3 50
C165	ECEA1HKN0R1	0.1 50
C168	ECEA1CKN100	10 16
C169	ECFD1H103KB	0.01 50
C181	ECQM1H474JZ	0.47 50
C182	RCBS1H221KBY	220P 50
C183	ECQM1H682JZ	0.0068 50
C184	ECEA1HKN010	1 50
C186	ECQM1H224JZ	0.22 50
C187	ECEA1HKNR47	0.47 50
C191	ECFD1H103KB	0.01 50
C192	ECFD1H103KB	0.01 50
C301	ECFD1E104ZF	0.1 25
C302	ECFD1E104ZF	0.1 25
C303	ECEA0JK470	47 6.3
C304	ECFD1E104ZF	0.1 25
C305	ECFD1H103KB	0.01 50
C307	ECCD1H220K	22P 50
C308	ECCD1H070CC	7P 50
C309	ECFD1E104ZF	0.1 25
C310	ECFD1E104ZF	0.1 25
C311	ECFD1H103KB	0.01 50
C312	ECFD1H103KB	0.01 50
C313	ECFD1E104ZF	0.1 25
C351	ECKD1H102KB	0.001 50
C352	ECKD1H102KB	0.001 50
C353	ECKD1H102KB	0.001 50
C354	ECFD1H103KB	0.01 50
C401	ECFD1E104ZF	0.1 25
C402	ECEA0JK470	47 6.3
C403	ECFD1E104ZF	0.1 25
C405	ECFD1E104ZF	0.1 25
C501	ECQM1H104JZP	0.1 50
C502	ECFD1E104ZF	0.1 25
C503	ECEA1CKS100	10 16
C504	ECFD1E104ZF	0.1 25
C505	ECFD1E104ZF	0.1 25
C506	ECCD1H150KC	15P 50
C507	ECKD1H102KB	0.001 50
C508	RBP1CN100CT	10 16
C509	ECCD1H100KC	10P 50
C510	ECQM1H104JZP	0.1 50
C511	ECEA1HUR47	0.47 50
C512	ECKD1H681K	680P 50
C513	ECKD1H681K	680P 50
C514	ECQM1H154JZ	0.15 50
C515	ECQM1H153JZ	0.015 50
C516	ECEA1HKN2R2	2.2 50
C517	ECKD1H471KB	470P 50
C518	ECKD1H472KB	0.0047 50
C601	RCBS1C103MYY	0.01 16
C602	ECEA1CKS100	10 16
C801	ECEA0JU471	470 6.3
C802	ECEA0JU471	470 6.3
C803	ECEA0JU471	470 6.3
C804	ECEA0JU471	470 6.3
C805	ECQP2A271JSP	270P 100
C806	ECQP2A271JSP	270P 100
C809	ECQP1392JZ	0.0039 100
C810	ECQP1392JZ	0.0039 100
C811	ECCD1H220K	22P 50
C812	ECCD1H220K	22P 50
C813	ECQP2A103JSP	0.01 100
C814	ECQP2A103JSP	0.01 100
C815	ECQP1122JZ	0.0012 100
C816	ECQP1122JZ	0.0012 100
C817	ARA1AN330M0T	330 10
C818	ARA1AN330M0T	330 10
C819	ECKD1H102KB	0.001 50
C820	ECKD1H102KB	0.001 50
C823	ARA1A470M0T	47 10
C826	ARA1A470M0T	47 10
C827	ECEA0JU471	470 6.3
C835	ECFD1H103KB	0.01 50
C836	ECFD1H103KB	0.01 50
C837	ECEA0JK220	22 6.3
C841	ECQM1H152JZ	0.0015 50
C842	ECQM1H152JZ	0.0015 50
C871	ARA1EN3R3M0	3.3 25
C872	ARA1EN3R3M0	3.3 25
C873	ECQM1H103KF	0.01 50
C874	ECQM1H103KF	0.01 50
C875	ECFTD103KXL	0.01 25
C876	ECFTD103KXL	0.01 25
C878	ECFTD103KXL	0.01 25
C879	ECFTD103KXL	0.01 25

B MAIN P.C.B.

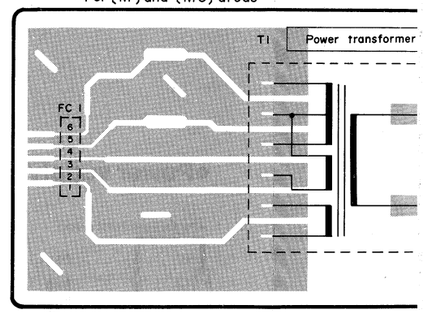


A OPERATION P.C.B.

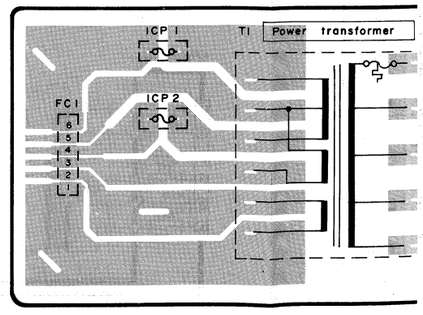


C POWER SOURCE P.C.B.

• For (M) and (MC) areas

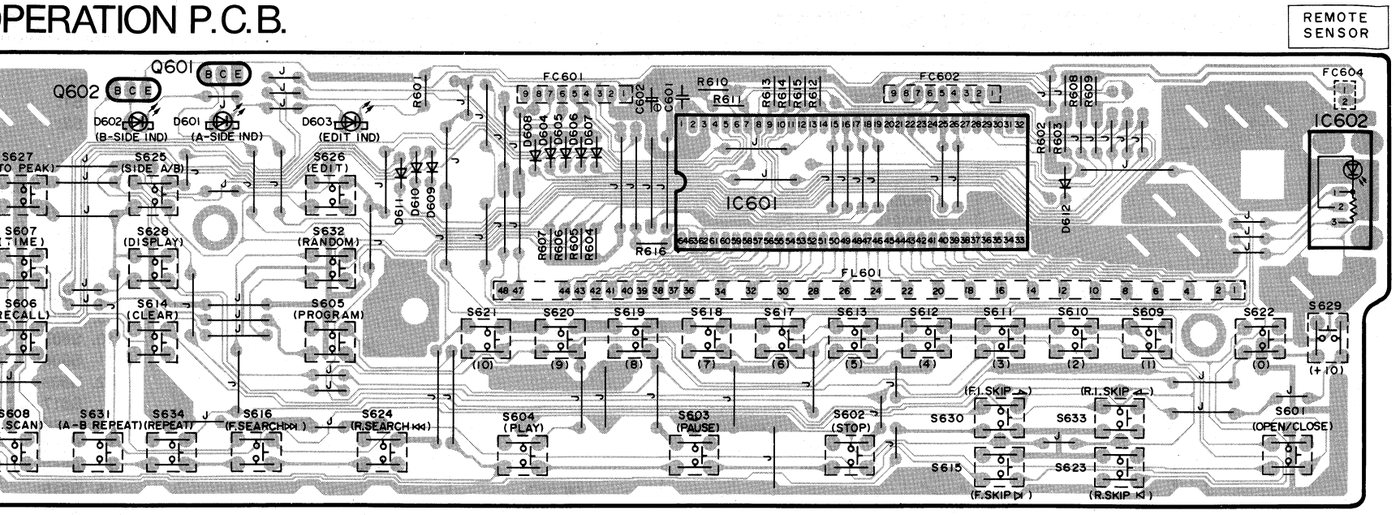


• For (XA), (XB), (PA), (PE) and (PC) areas

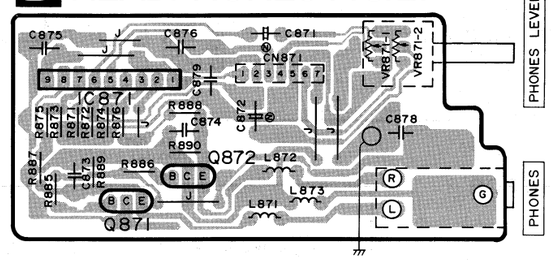


13 14 15 16 17 18 19 20 21 22 23 24 25 26

OPERATION P.C.B.

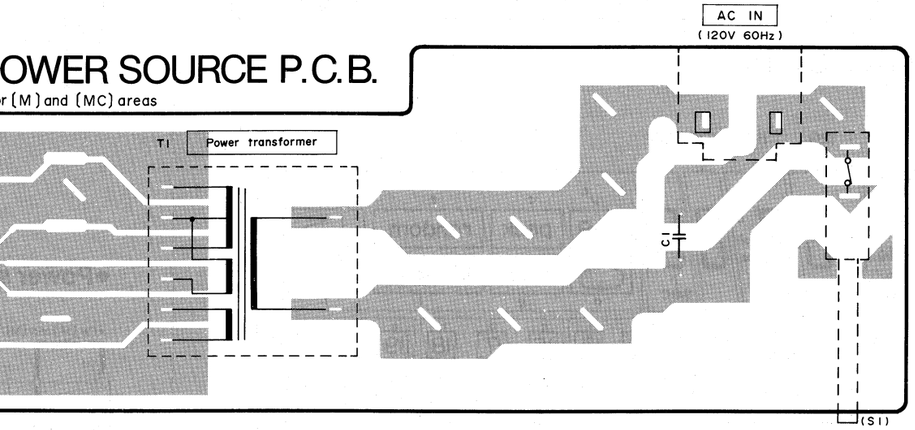


D HEADPHONES P.C.B.

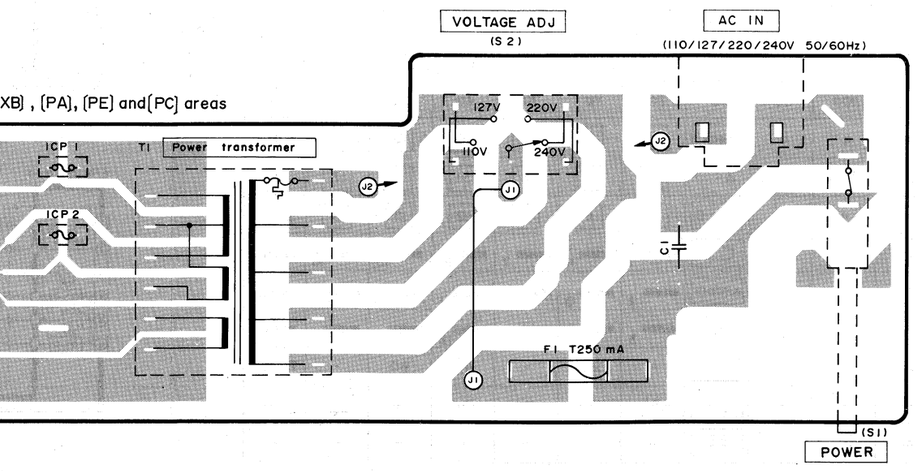


POWER SOURCE P.C.B.

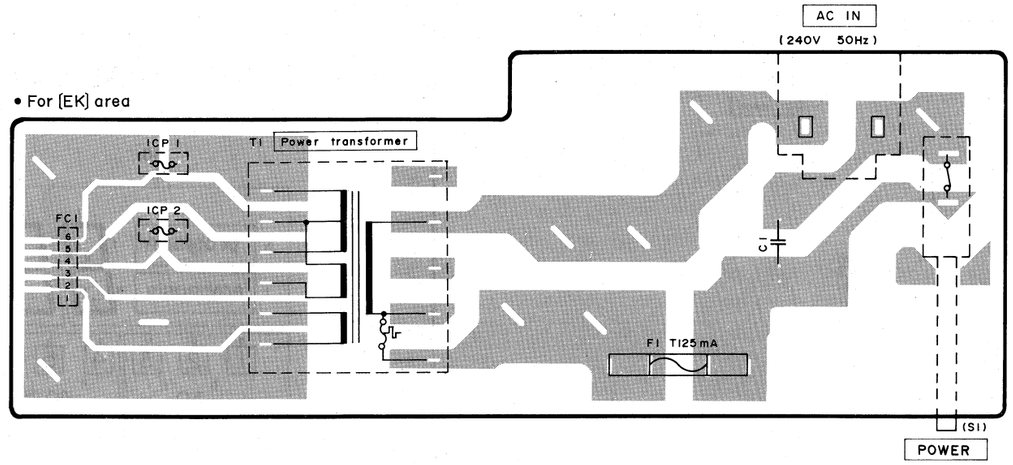
For (M) and (MC) areas



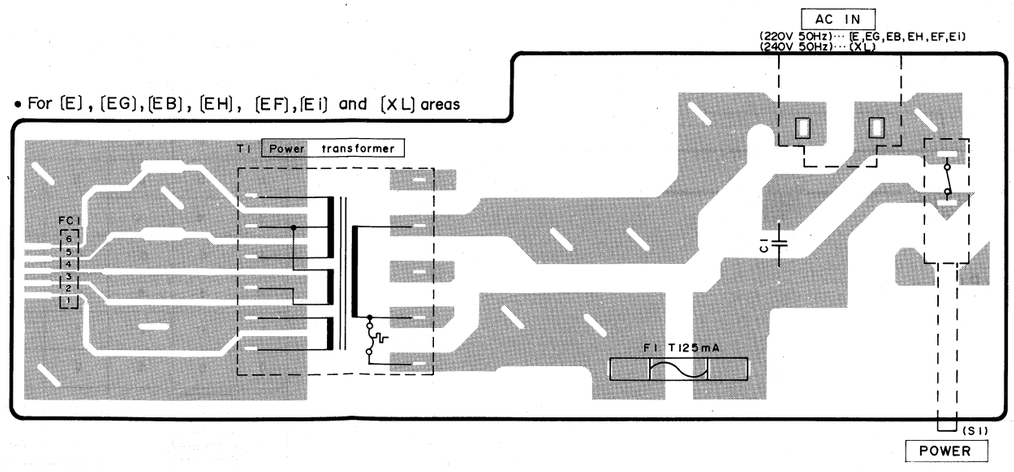
For (XB), (PA), (PE) and (PC) areas



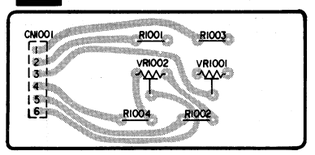
• For (E) area



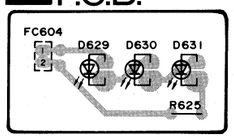
• For (E), (EG), (EB), (EH), (EF), (Ei) and (XL) areas



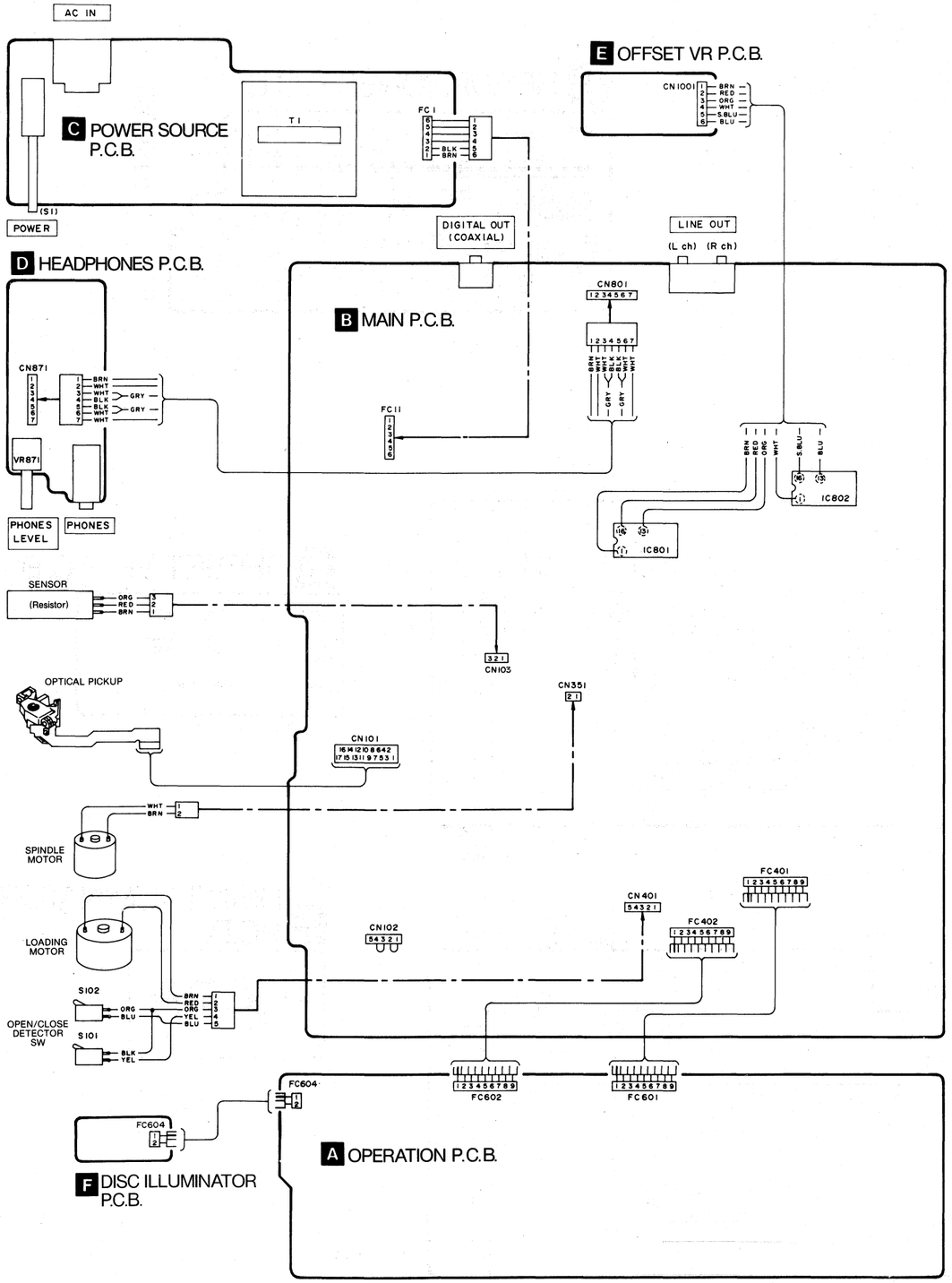
E OFFSET VR P.C.B.



F DISC ILLUMINATOR P.C.B.



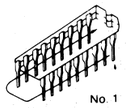
■ PRINTED CIRCUIT BOARD AND WIRING CONNECTION DIAGRAM



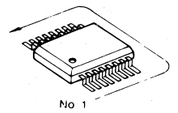
■ TERMINAL GUIDE OF TRANSISTORS, IC'S AND DIODES

• Terminal guide of IC's, Transistors and Diodes

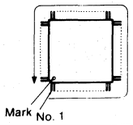
MN15283PEE	64 pin
MN1554PEF	
MN6030	22 pin
PCM56P-J	16 pin
YM3404B	



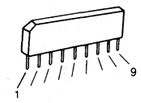
AN8370	42 pin
AN8371	24 pin
SVICXK5816M	
SVIUPD4053G1	16 pin
MN74HC00	14 pin
AN6554NS	
MN6636S	10 pin
SVINJM5532	8 pin
SVIM5219	
AN6552S	



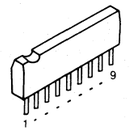
MN6622 ..... 84 pin
MN53010PEH ..... 42 pin



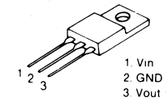
SVINJM4556SA



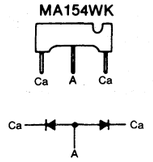
SVIBA6218



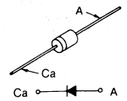
LM2940T5
M5F78M08L



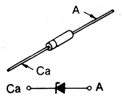
MA154WK



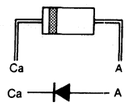
MA165



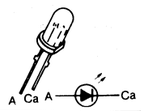
MA4033 SVDMTZ33
MA4082 MA4062-H
MA4056



SVD1S35200A

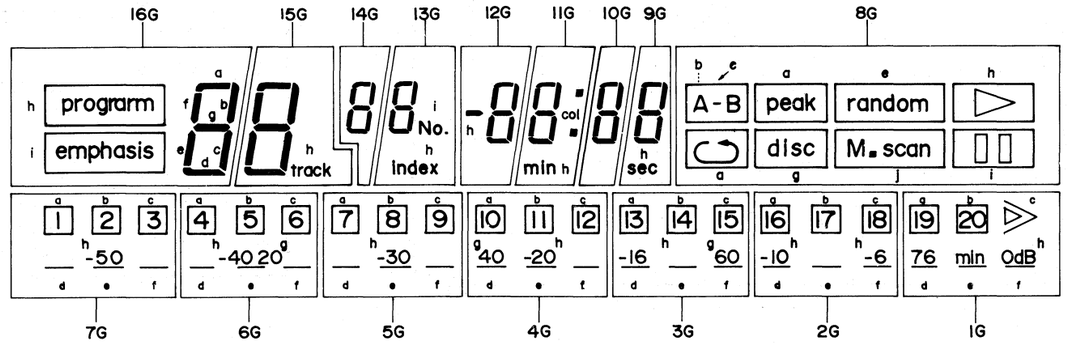


SVGDPG7851Y
SVGDAY7851
LN66



■ INTERNAL CONNECTIONS OF FL

•Grid connection diagram



•Anode connection table

	16G	15G	14G	13G	12G	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
a	a	a	a	a	a	a	a	a	peak	1	4	7	10	13	16	19
b	b	b	b	b	b	b	b	b	A-	2	5	8	11	14	17	20
c	c	c	c	c	c	c	c	c	B	3	6	9	12	15	18	▶
d	d	d	d	d	d	d	d	d	↻	—1	—4	—7	—10	—13	—16	—19
e	e	e	e	e	e	e	e	e	random	—2	—5	—8	—11	—14	—17	—20
f	f	f	f	f	f	f	f	f	M.scan	—3	—6	—9	—12	—15	—18	—21
g	g	g	g	g	g	g	g	g	disc	-	20	-	40	60	-	76 min
h	program	track	-	index	—	min	-	sec	▶	-50	-40	-30	-20	-16	-10 -6	0 dB
i	emphasis	-	-	No.	-	col	-	-	II	-	-	-	-	-	-	-

■ SCH

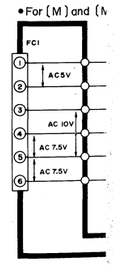
(This schema
development

Notes:

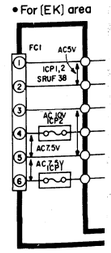
1. **S1:**
2. **S2:**
3. **S101, 10**
4. **S601:**
5. **S602:**
6. **S603:**
7. **S604:**
8. **S605:**
9. **S606:**
10. **S607:**
11. **S608:**
12. **S609~61**
    S617~62
    S629:
13. **S614:**
14. **S615:**
15. **S616:**
16. **S623:**
17. **S624:**
18. **S625:**
19. **S626:**
20. **S627:**
21. **S628:**
22. **S630:**
23. **S631:**

•Power

• For (M) and (M



• For (EK) area



■ SCHEMATIC DIAGRAM

(This schematic diagram may be modified at any time with the development of new technology.)

Notes:

1. **S1:** Power switch in **"on"** position.
2. **S2:** Voltage selector switch. (For [XA], [XB], [PA], [PE] and [PC] areas.)
3. **S101, 102:** Disc holder open/close detection switch.
4. **S601:** Open/Close switch.
5. **S602:** Stop switch.
6. **S603:** Pause switch.
7. **S604:** Play switch.
8. **S605:** Program switch.
9. **S606:** Recall switch.
10. **S607:** Time mode switch.
11. **S608:** Memory scan switch.
12. **S609~613, S617~621, S629:** Numeric switch.
13. **S614:** Clear switch.
14. **S615:** Forward skip switch.
15. **S616:** Forward search switch.
16. **S623:** Reverse skip switch.
17. **S624:** Reverse search switch.
18. **S625:** Side A/B switch.
19. **S626:** Edit switch.
20. **S627:** Auto peak switch.
21. **S628:** Display switch.
22. **S630:** Forward index skip switch.
23. **S631:** A-B Repeat switch.
24. **S632:** Randam switch.
25. **S633:** Reverse index skip switch.
26. **S634:** Repeat switch.
27. The voltage value and waveform are the reference voltage of this unit measured by DC electronic voltmeter (high impedance) and oscilloscope on the basis of chassis. Accordingly, there may arise some error in voltage values and waveforms depending upon the internal impedance of the taster or the measuring unit. *The parenthesized are the values of voltage generated during playing (Test disc 1 kHz, L+R, 0 dB), others are voltage values in stop mode.
28. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
29. ——— : Porisitive voltage lines. - - - - : Negative voltage lines. ▒▒▒

B MAIN CIRCUIT

IC402 BA6218 MOTOR DRIVE

IC401 MN1554PEF SYSTEM CONTROL

OPTICAL PICKUP

IC101 AN8370S OPTICAL SERVO

Q101 2SC4010 AUTO POWER CONTROL

Q501 DTA124 SWITCHING

IC104, IC105 SVIBA4558FTI FOCUS COIL/ TRACKING COIL DRIVE

IC103 AN6554NS TRAVERSE SERVO

IC102 MN6636S SWITCHING

Q141, 161 2SD1862 FOCUS COIL/ TRACKING COIL DRIVE

Q142, 162 2SB1240 FOCUS TRACKING COIL DRIVE

Q181 2SD1846 TRAVERSE COIL DRIVE

Q182 2SA885 TRAVERSE COIL DRIVE

IC301 MN6622 E.F.M DECODER ERROR CORRECTION & CLV SERVO

IC304 MN74HC00S NAND GATE

Q401, 402 2SC3311 REST SIGNAL GENERATOR

Q352 2SD1862SVI MOTOR DRIVE

IC12 BA4558FTI MOTOR CONT

Q351 DTA124 MOTOR CONT

Q353 2SB1240 MOTOR DRIVE

16K RAM

Best eye (P.D. balance) adj

Tracking balance adj

Tracking offset adj

Focus offset adj

Tracking gain adj

Focus gain adj

CN102

Tracking balance adj

IC101
AN8370S
OPTICAL SERVO

Q101
2SC4010
AUTO POWER CONTROL

Tracking gain adj

IC105

IC501
AN8371S
DATA SLISE & PLL

Q501
DTA124
SWITCHING

PLL adj

IC301
MN6622
E.F.M DECODER
ERROR CORRECTION
& CLV SERVO

L302 3.3μH

IC303
CXK5816M
16K RAM

16K RAM

Q352 2SD1862SVI MOTOR DRIVE
IC12 BA4558FTI MOTOR CONT
Q351 DTA124 MOTOR CONT

Q353
2SB1240
MOTOR DRIVE

IC306
MN74HC00S
NAND GATE

IC305
MN53010PEH
SLIAL/PARALEL CONVERTER

IC302
YM3404B
DIGITAL FILTER

Q17 2SB1238 REGULATOR
Q11 2SD1862 REGULATOR
IC12 SVIBA4558FTI REGULATOR
IC11 LM2940T5 REGULATOR
Q12 2SB1240 REGULATOR
Q13 2SD1762 REGULATOR
Q21 2SB1240 REGULATOR
Q20 2SD1862 REGULATOR
Q18 2SC3311 REGULATOR
Q19 2SA1309 REGULATOR

IC809,810 SVINJM5532M BUFFER AMP
IC815,816 SVIUPD4053GI SWITCHING
IC811,812 SVINJM5532M FILTER AMP
Q813,814 SVIM5219FPTA CLASS AA BUFFER AMP
Q807 DTA114 MUTING CONTROL
Q809 DTA124 MUTING CO
Q808 2SA1309 MUTING CO

IC801,802 PCM56P-J D/A CONVERTER

Q807
Q808
Q809

23 24 25 26 27 28 29 30 31 32 33 34 35

C POWER SOURCE CIRCUIT

FC11 FC1 T1 S1 (POWER) C1 0.01 AC 120V 60Hz

AC 5V AC 10V AC 7.5V AC 7.5V

For U.S.A. and Canada areas

C14 0.1

D11~14,19 SVD1SR35200V

D HEADPHONES CIRCUIT

IC871 SVINJM4556SA HEADPHONES AMP

Q871,872 2SD1450 MUTING

HEADPHONES

(PHONES VR871-1 LEVEL) 10K

CN801 CN871

E OFFSET VR CIRCUIT

BRN RED ORG WHT S.BLU BLU

R1003 100K VR1001 100KB R1001 100K R1004 100K VR1002 100KB R1002 100K

offset voltage adj.

Q17 2SB1238 REGULATOR

Q11 2SD1862 REGULATOR

IC12 SVIBA4558FTI REGULATOR

IC11 LM2940T5 REGULATOR

D17 SVD1SR35200V D18 SVD1SR35200V D19 SVD1SR35200V

D24 SVD1N4733 D25 MA4033M D26 MA4033M

C39 50V330 C40 50V330 C15 16V3300 C16 16V3300

C25 0.01 D23 MA4082 R24 470

+7.8V +B 10.5V +B −10.5V −B

−12V −B +12V +B +5V (A) +5V (B) −5V −B

C19 6.3V330 C20 6.3V330 C21 0.1 C22 0.1 R16 6.8K R17 6.8K R10 10K R12 10K C17 16V47 C18 16V47

IC11 IC12 Q12 2SB1240 REGULATOR

Q13 2SD1762 REGULATOR

Q21 2SB1240 REGULATOR Q20 2SD1862 REGULATOR

D51,52 SVD1SR35200V

Q18 2SC3311 REGULATOR

Q19 2SA1309 REGULATOR

C83 10V100 C84 10V100 C87 16V100 C88 16V100 R44 1K R45 1K

IC306 MN74HC00S NAND GATE

L303 2.2μH C23 6.3V330 C24 0.01 D22 MA4056M R22 470

Q20 D20 MA4082M C59 16V100 C60 16V100 C57 0.01 C58 0.01 R18 330 R19 330 R20 470 R21 470 C55 16V220 C56 16V220 C53 16V330 C54 16V330 D51 D52

Q21 D801,807,808 SVD1SS254

IC809 IC815 IC809,810 SVINJM5532M BUFFER AMP

IC815,816 SVIUPD4053GI SWITCHING

R859 47K R861 1K R863 12K R837 12K R865 12K C811 22P

R911 3.3K R913 3.3K

IC815 IC809 IC811 IC813 IC811,812 SVINJM5532M FILTER AMP

R849 1.8K C815 0.0012 R845 1.8K R847 820 R901 100 R905 10K R823 3.9K C809 0.0039 R843 820K R903 330 R907 33K R839 82K R841 10K C813 0.01 L801 82μH C826 10V47 C841 0.0015 R915 4.7K R917 4.7K

IC306 IC302 YM3404B DIGITAL FILTER IC305 MN53010PEH SLIAL/PARALEL CONVERTER

IC801 IC802 IC801,802 PCM56P-J D/A CONVERTER

D807 D808 C802 6V470 C804 6V470 D801 D802 C803 6V470 C805 6V470 C835 0.01 C836 0.01 C806 270P

IC810 IC816 IC812 Q813,814 SVIM5219FPTA CLASS AA BUFFER AMP

R860 47K R862 1K R864 12K R838 12K R866 12K C812 22P

R850 1.8K C816 0.0012 R846 1.8K R848 820 R902 100 R906 10K R824 3.9K C810 0.0039 R844 820K R904 330 R908 33K R840 82K R842 10K C814 0.01 L802 82μH C824 10V47 C842 0.0015 R916 4.7K R918 4.7K

Q807 DTA114 MUTING CONTROL

Q808 2SA1309 MUTING CONTROL

Q809 DTA124 MUTING CONTROL

D810,811 SVD1SS254 R836 1K C827 6V470 D811 R835 10K D809 SVD1SS254 R829 47K C837 6V22 D812 SVD1SS254

C817 10V33 R851 270 R853 270 R897 120 R831 1K R833 1K C819 0.001 R895 100K Q803 Q805 D805 SVD1SS254

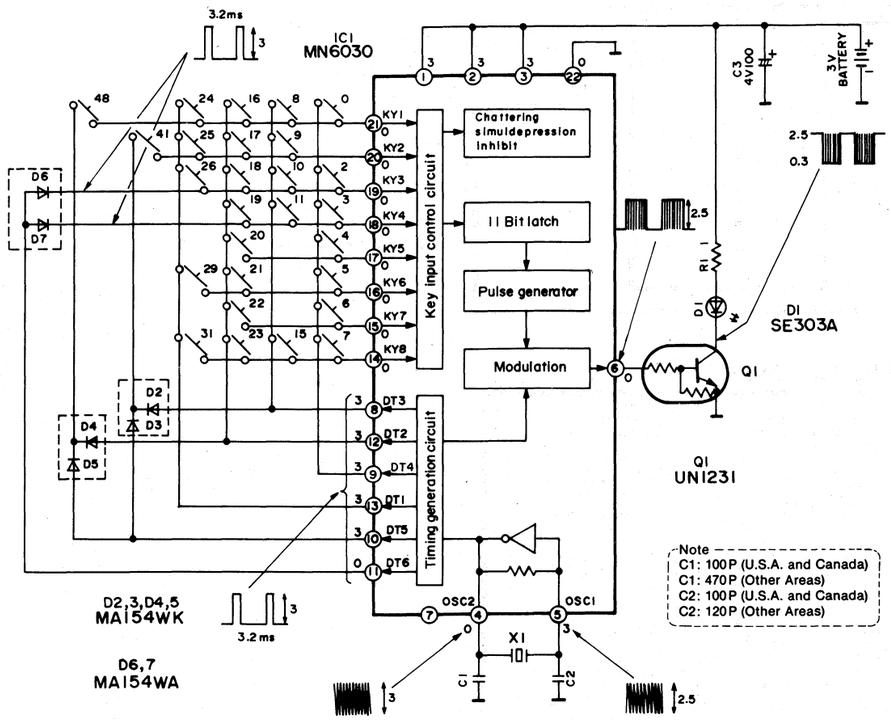
Q803~806 2SD1450 MUTING

C818 10V33 R854 270 R898 120 R832 1K R834 1K C820 0.001 R896 100K Q806 Q804 D806 SVD1SS254

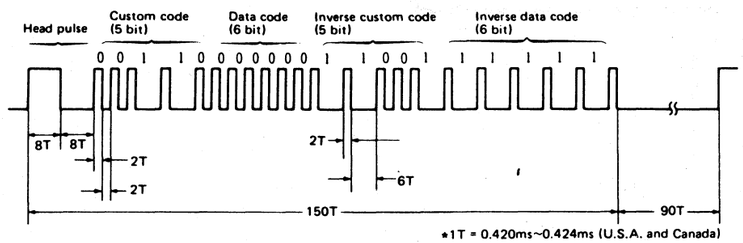
L ch R ch LINE OUT

Play 1μs 2V/DIV Play 2μs 0.6μs Play 1μs 2V/DIV Play 1μs 1μs F20 AC Play 1μs 2V/DIV 5μs 2V/DIV Play Play 3μs Play 0.5ms 2V/DIV 1ms

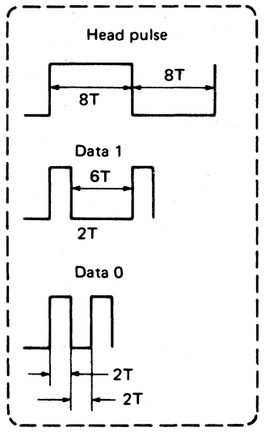
• Remote control unit



• Remote control data code



*1T = 0.420ms~0.424ms (U.S.A. and Canada)
1T = 0.454ms~0.460ms (Europe and Others)

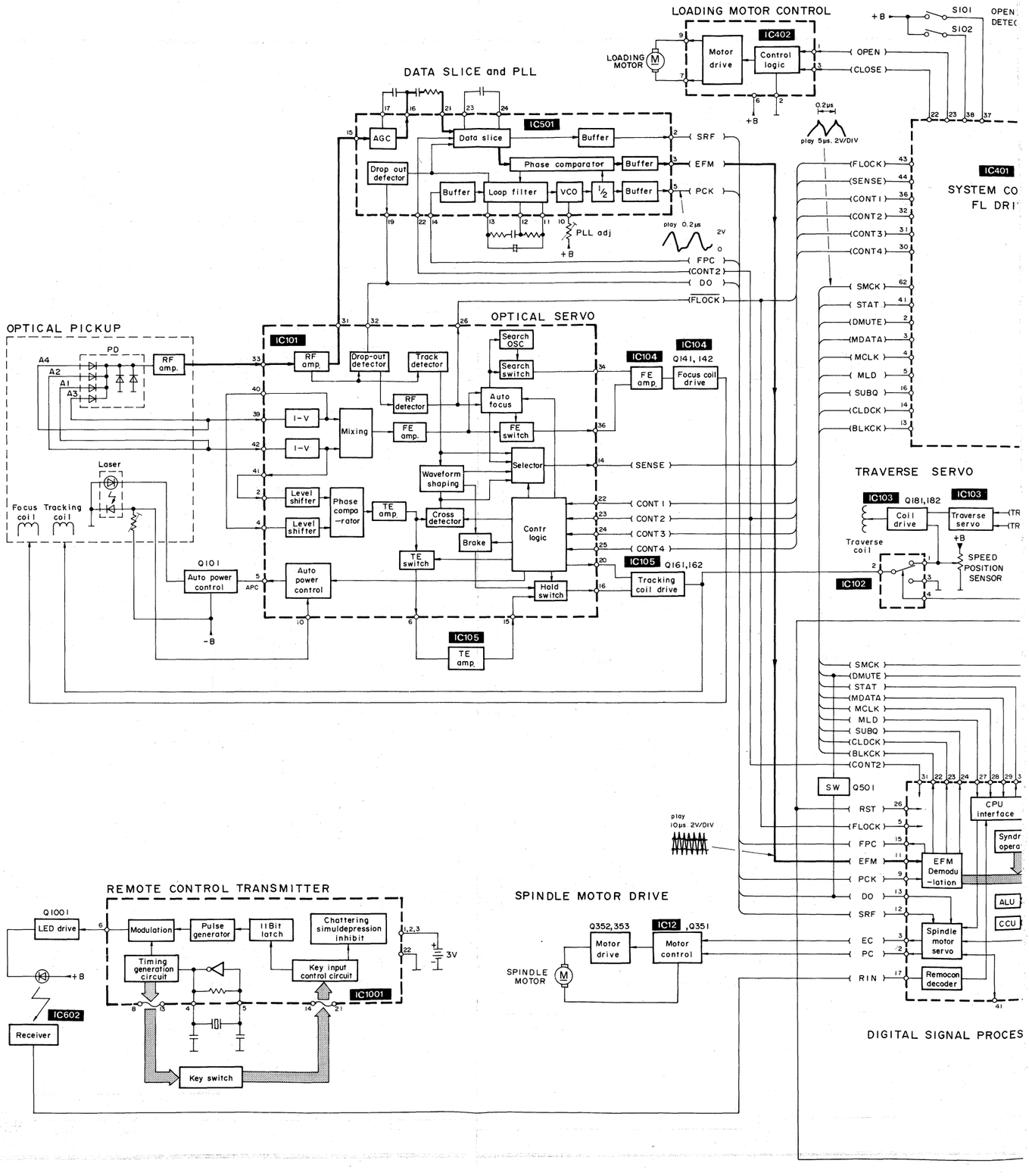


Key No.	Function	Data Code
16	1	010000
17	2	010001
18	3	010010
19	4	010011
20	5	010100
21	6	010101
22	7	010110
23	8	010111
24	9	011000
25	0	011001
26	+10	011010
41	time	101001
0	stop	000000

Key No.	Function	Data Code
11	clear	001011
8	A-B repeat	001000
7	repeat	000111
15	M scan	001111
9	recall	001001
4	◀◀ search	000100
5	search ▶▶	000101
2	⏮ skip	000010
3	skip ⏭	000011
6	⏸ pause	000110
10	◀ play	001010
29	Program	011101
31	random	011111

SL-P550 SL-P550

■ BLOCK DIAGRAM



SL-P550

LOADING MOTOR CONTROL

IC402

Motor drive

Control logic

LOADING MOTOR

OPEN

CLOSE

+B

SI01

SI02

OPEN/CLOSE DETECTOR

0.2μs

play 5μs. 2V/DIV

DATA SLICE and PLL

IC501

AGC

Data slice

Buffer

SRF

Phase comparator

EFM

Drop out defector

Loop filter

VCO

1/2

PCK

PLL adj

play 0.2μs

2V

FPC

CONT2

DO

FLOCK

OPTICAL SERVO

Drop-out detector

Track detector

Search OSC

Search switch

IC104

FE amp.

Q141, 142

Focus coil drive

RF detector

Auto focus

Mixing

FE amp.

FE switch

Waveform shaping

Selector

SENSE

Phase compa-rator

TE amp.

Cross detector

Brake

Contr logic

CONT1

CONT2

CONT3

CONT4

TE switch

IC105

Q161,162

Tracking coil drive

Hold switch

IC105

TE amp.

IC401

SYSTEM CONTROL FL DRIVE

FLOCK

SENSE

CONT1

CONT2

CONT3

CONT4

SMCK

STAT

DMUTE

MDATA

MCLK

MLD

SUBQ

CLDCK

BLKCK

RECV

SEND

MUTE2

EMPH

RST

TRAVERSE SERVO

IC103

Q181,182

Coil drive

Traverse servo

TRV-R

TRV-F

Traverse coil

+B

SPEED POSITION SENSOR

IC102

IC601

FL DRIVE TIMING GENERATOR

RECV

SEND

SMCK

RST

Q401, 402

Reset signal genelator

+B

Q602

LED Drive

D602

B-SIDE

P31

Q601

LED Drive

D601

A-SIDE

P30

D603

EDIT

-B

IC304

T301

DIGITAL OUTPUT COAXIAL

Key matrix

FL601

16K RAM

IC303

Row decoder

Memory array

Data control

Column I/O

Column decoder

Chip select, write enable, output enable

DMUTE

SW Q501

RST

FLOCK

FPC

EFM

PCK

DO

SRF

EC

PC

RIN

play 10μs 2V/DIV

CPU interface

IC301

Syndrome operation

ALU

CCU

EFM Demodu-lation

Spindle motor servo

Remocon decoder

Digital audio interface

8Sample linear interpolated

Address

RAM Address generator

Timing generator

TX

EMPH

XCK

WE

OE

SMCK

LRCK

X301

16.9344 MHz

DIGITAL SIGNAL PROCESSING

5μs 5μs

play 5μs. 2V/DIV

DIGITAL FILTER

IC302

S/P Conver-ter

Output buffer

Over flow limiter

Data RAM L,R

Multiplicator accumulator shifter

P/S Conver-ter

Timing address control

Temporary RAM

Factor ROM

SDSY

SIN

WC

BC

SHR

SHL

SERIAL/PARALLEL CONVERTER

IC305

S/P Conver-ter

Shift resistor

Mixing (+)

P/S Converter

P/S Converter

Output control gate

Level detector, counter, timing generator

IC306

GAIN

EMPH

MUTE 2

RST

SPINDLE MOTOR DRIVE

Q352,353

Motor drive

IC12

Q351

Motor control

SPINDLE MOTOR

Chattering simuldepression inhibit

y input ol circuit

IC1001

1,2,3

3V

TI

SI (POWER)

AC IN

Q17

Regulator

D17,18

Rectifier

-31.6V

IC11 IC12

Q12

Regulator

D11~14

Rectifier

+5V(A)

-5V

+10.5V

-10.5V

Q11, D23

Regulator

+7.8V

Q13, D22

Regulator

+5V(B)

Q20,21,D20,21

Regulator

+6.4V

-6.4V

+12V

-12V

D51,52

Rectifier

Q18,19

Regulator

+9.6V

-10.3V

BUFFER AMP

IC809

IC815

IC811

D/A CONVERTER

IC801

16Bit current output DA converter

16Bit latch

16Bit S/P conversion

Level shift and control logic

IC802

16Bit current output DA converter

16Bit latch

16Bit S/P conversion

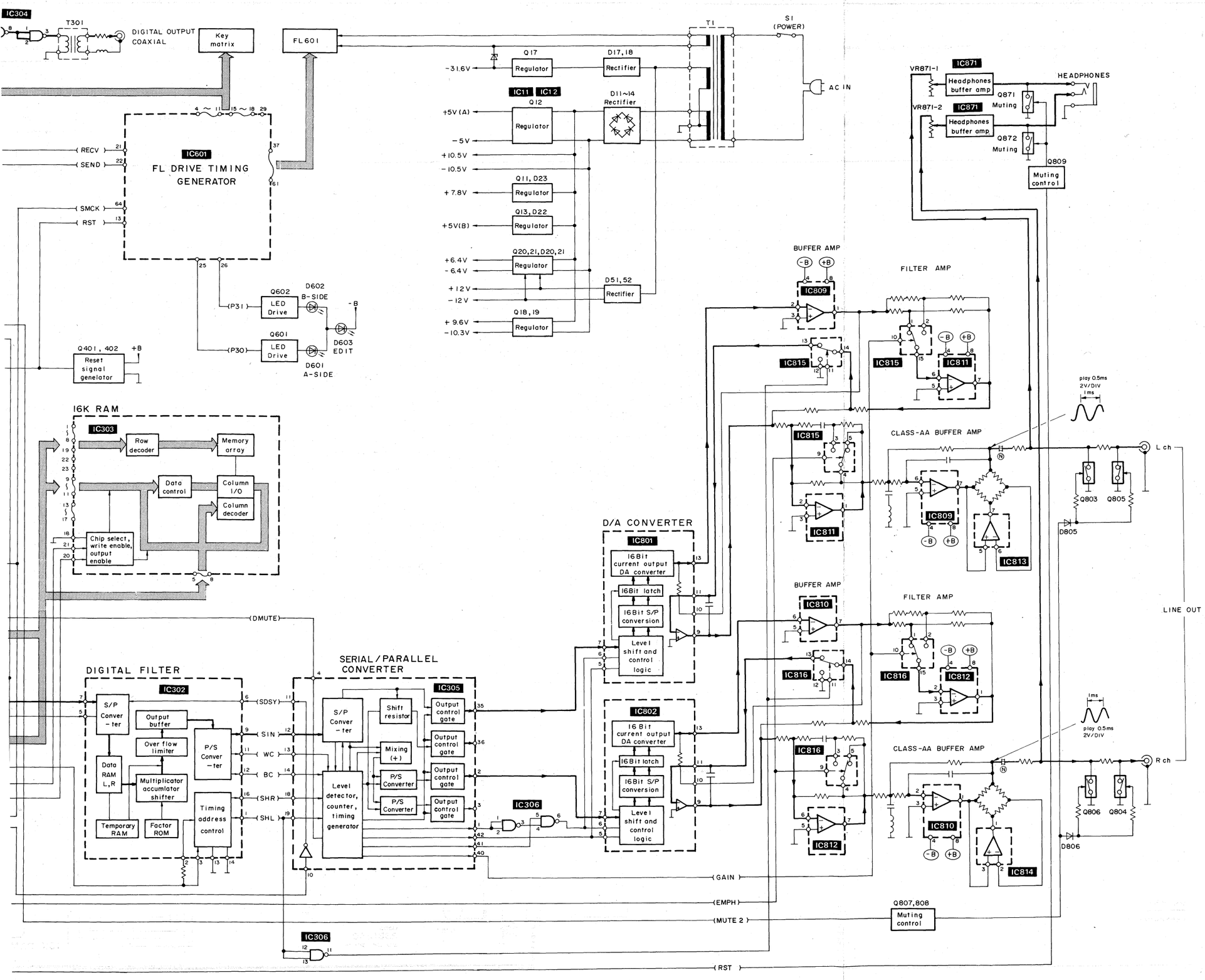
Level shift and control logic

BUFFER AMP

IC810

IC816

IC812



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